

AMERICAN NURSERYMAN

The Nurseryman's Forte: To Make America More Beautiful and Fruitful

MAY 1, 1937



Philadelphus Amalthee

**Herbs for the Garden
Work with Blight-Resistant Chestnuts
Irrigation for Nursery and Garden
Native Plants of Garden Value**

AMERICAN NURSERYMAN

Chief Exponent of the Nursery Trade

F. R. KILNER, Editor

Published Semi-monthly by
AMERICAN NURSERYMAN
PUBLISHING CO.

508 S. Dearborn Street,
Chicago, Ill.

Telephone: Wabash 8194

New York Office—67 West 44th Street
N. L. Huebsch Tel., Murray Hill 2-4871

Entered as second-class matter December 14,
1933, at the post-office at Chicago, Ill., under
the act of March 3, 1879.

SUBSCRIPTION PRICE, \$1.00 per year; out-
side United States, \$1.50. Single copies, 10c.

ADVERTISING RATES on application. Forms
close on 10th of month for mid-month issue
and on 25th of previous month for first-of-
month issue. If proofs are wanted, copy
should be on hand one week earlier.

EDITORIAL communications on subjects
connected with nurseries, arboriculture or
other phases of commercial horticulture are
welcomed by the editor. Also articles on the
subjects and papers prepared for conventions
of nursery associations.

WHY NOT?

Out of a half-dozen or more big
spring flower and garden shows only
one was conspicuous for exhibits by
nurserymen, and that not the largest.
The total number of nurserymen's dis-
plays in all the spring shows was so
small as to be a matter of comment.

The seed houses, which do extensive
advertising already, are conspicuous
in the shows. The seedsmen's indi-
vidual orders are small, but they put
forth large efforts to get them.

The retail nurseryman or landscape
firm, whose orders are of larger size,
would not have to obtain many to
make such an exhibit profitable. Group
exhibits are of public interest, but they
do not advertise the individual firm's
service or merchandise. Why is the
trade not better represented—because
of the expense, because of the time,
or because of a failure to appreciate
the publicity value of such displays?

SALES TO BE MADE.

Although most optimistic reports
come from wholesale nurserymen all
over the country as to spring sales,
showing gains of considerable size
everywhere and in some instances dou-
bling those a year ago, there is still
available ample stock for those who
want to develop retail business. Some
items may be short and difficult to
obtain, but others will do as well for
the rank and file of the public, which
largely buys from what is offered, not
from the books.

Nurserymen dependent upon retail
business need not reduce their selling

The Mirror of the Trade

efforts in apprehension of lack of mer-
chandise. Particularly in view of the
diminished sales effort in the years of
the depression, more needs to be di-
rected to the public to meet the com-
petition of all those other items of
merchandise that are pressed upon the
home owner, from a new radio to a
remodeled bathroom. Few streets in
any town show the grounds planted as
they should be. Too many home
premises are barren. For every one
that is overplanted there are a thou-
sand underplanted.

While the individual sale of nurs-
ery stock is an immediate matter, the
swelling volume of business that
speaks trade prosperity follows only
the public awakening to the desira-
bility of planting. Too many folks
have been getting along without any
nursery purchases. Redoubled efforts
will be necessary to get them back,
even to move completely the current
limited supplies.

THE TAXPAYER LOSES.

Commenting on the support given
by Minnesota nurserymen to secure
continuance of the seed research
laboratory of the United States lake
states forest station, because of their
belief that both reforestation of cut-over
areas and the establishment of groves
on the plains areas are a real necessity
to the future of agriculture and horti-
culture, R. D. Underwood, president
of the Minnesota Nurserymen's Asso-
ciation, explains that, as taxpayers and
employers of labor, they object to gov-
ernment nurseries by no means solely
on self-interest. "The primary and
really important reason is that they
know their long technical experience in

production makes it possible for them
to grow and deliver the required stock
to government agencies, both state and
federal, at a lower cost to the govern-
ment than could possibly result from
government nurseries. All federal
nursery projects depend on biennial
appropriations in Congress and the
state legislatures. History proves that
these projects are constantly started
up in one session and then abandoned
in some subsequent session, with large
resultant losses of both money and
effort."

PHILADELPHUS AMALTHEE.

Philadelphus Amalthée is believed
to be the first mock orange to show
pink. The intensity of the color,
which usually is only a faint sugges-
tion of pink at the base of the petals,
apparently varies with climatic and
soil conditions, the same as with
many other plants. Amalthée is a
Lemoine hybrid and is described by
the originator as a vigorous-growing
shrub with long lustrous leaves and
large flowers which are slightly
blotched pale pink.

The photograph from which the
cover illustration was made was
taken in the Breeze Hill Gardens, at
Harrisburg, Pa., in the middle of
June, and shows the shapeliness and
floriferousness of this new hybrid
philadelphus.

A plant at the Morton Arboretum,
which is about twenty-five miles west
of Chicago, has withstood the rigor-
ous winters of 1933-34 and 1935-36,
so that nurserymen need not worry
about its hardiness. Fortunately,
stock of this attractive philadelphus
is now available in this country.
Propagation is the same as for other
named varieties—softwood and hard-
wood cuttings. The former can be
rooted readily in summer or hard-
wood cuttings taken in fall after the
leaves have fallen can be stored over
winter in a cold pit or storage room
and planted out in spring.

Amalthée is only one of a num-
ber of fine philadelphus hybrids, in
addition to Virginal, that need to be
called to the attention of home gar-
deners. Well directed publicity and
advertising will likely be necessary
to draw the public's attention to the
various merits of these hybrids.

SECRETARIES, PLEASE NOTE.

The news columns of the
American Nurseryman are open to
all trade organizations throughout
the country. The officers can pro-
mote interest and membership in
their organizations by forwarding
reports of their activities for pub-
lication. Many nurserymen in your
own state not now members sub-
scribe to this magazine and will be
induced to join by reading of the
work of your organization. More
than that, the trade throughout the
country is interested to know what
is going on, and greater unity of
effort for the advancement of the
industry is promoted in this way.

AMERICAN NURSERYMAN

[Registered U. S. Patent Office]

The Chief Exponent of the American Nursery Trade

*The Nurseryman's Forte:
To Make America More Beautiful and Fruitful*

VOL. LXV

MAY 1, 1937

No. 9

Herbs for the Garden

Comprehensive List and Descriptions Afford Information Frequently Requested Because of Increasing Popular Interest in Herb Gardens

Our great-grandmothers had their herb gardens and used herbs in cooking as well as in domestic medicinal remedies, but for the past hundred years, for one reason or another, the growing and the use of herbs have been nearly forgotten. A few domestic remedies were kept in use until the beginning of this century, particularly in the country districts, and a few herbs are cultivated commercially, but otherwise the great majority of us have forgotten the herbs and the many uses they formerly served.

Some of the herbs that were integral parts of the herb garden have been moved to the flower garden because of their ornamental value, and most gardeners have forgotten, if they ever knew, the other uses of such plants as the thymes, the lavenders, lavender cotton, the artemisias and the nasturtiums.

In the past few years there has been a great revival of interest in the growing of old-fashioned herbs. Herb gardens have not supplanted rock gardens, but the interest shown in them is beginning to rival the interest in rockeries. Earlier articles in these columns have brought readers' inquiries so numerous that this more comprehensive presentation of the subject has been prepared.

From a technical standpoint, an herb is a seed plant whose stem does not develop woody tissue, as that of a shrub or tree, but persists only long enough for the development of flowers and seeds. It may be an annual, biennial or perennial. However, this definition is confusing, since practically all of our vegetables and garden flowers answer this description. Therefore, for

the purposes of this article, herbs are defined as those plants which, because of their aromatic and pharmaceutical properties, are useful for medicinal, perfuming or flavoring purposes.

Many plants which have definite ornamental value fall within the limits of this definition. Also, some plants with woody tissue would be included. For instance, the laurel, or sweet bay, *Laurus nobilis*; the rosemary, *Rosmarinus officinalis*; the sassafras, *Sassafras variifolium*, and those artemisias which are shrubs, all have either aromatic or pharmaceutical properties and are thought of in connection with herb gardens and home remedies, but none of them is technically an herb.

Under present-day conditions few people care much about the pharmaceutical properties of herbs, for the practice of medicine is now left to the medical profession, but the aromatic properties and the culinary uses of herbs are the things of most interest.

The use of old-fashioned herbs in culinary preparations seems to mark the great difference between European and American cooking. The English housewife uses many herbs, the French and German many more, but the American housewife usually has no knowledge of herbs except for a few standard ones such as parsley and sage, that may be purchased in every grocery store, though in the south spearmint and pennyroyal are also well known.

The use of herbs redeems many a dish from mediocrity and opens the way to the preparation of an infinite number of distinctive and appetizing concoctions. An herb garden takes but little space, and fresh herbs will tempt

the cook to exercise her ingenuity and resourcefulness.

Many of the herbs emit pleasing and enticing odors naturally or when certain of their floral or foliage parts are crushed. The herb garden usually manifests itself by the clean, spicy fragrance which permeates the air in its vicinity. The flowers or foliage of some herbs retain these aromatic qualities after drying and are used to perfume linens or clothes. Lavender is frequently used in this manner and so is sweet woodruff, called *waldmeister* by the Germans, botanically known as *Asperula odorata*, which has a pleasant hay-like fragrance that lasts for years. Our maternal ancestors commonly used *Melissa officinalis* or *Origanum majorana* when polishing furniture, for their aromatic oils made polishing easier and left a pleasing odor.

Where dried foliage is used, the plants should be thoroughly cleaned and hung in a warm dry room until entirely dry. Then the leaves may be crushed and stored in tightly closed glass jars. Sachets may be filled with the crushed dry leaves and placed in wardrobes and drawers.

When seeds are used, the plants or seed heads should be gathered when mature and just before the seeds fall. The seeds should be threshed out carefully after the plants or seed heads have become dry. Then the seeds should be dried for a week or more longer in thin layers, preferably on a cloth tray, before being placed in jars.

Infusions of fresh, clean leaves are often made by packing the leaves in stoppered jars and covering with good vinegar.

The culture of most herbs is not

particularly difficult. At times the gardener's problem is to keep the hardy herbs from becoming weedy and over-running his garden. Some herbs persist for years in old homesteads. Like all other plants, they will be most attractive and give best results if given cultural attention and if planted under conditions favorable to their development.

Most herbs do best in a sunny location with light, loamy, well drained soil that is not too rich. Many of them will produce a more luxuriant growth in partial shade and with more moisture, but plenty of sunshine seems a necessary factor in bringing the volatile oils, which are responsible for the odors and flavors of the various herbs, to their maximum development.

If the soil is too rich, the growth will be too rank and the quality of the aromatic oils will be poor. Except for a few, particularly those that are cut frequently, such as parsley,

chives and basil, herbs do not require manure or fertilizers. In fact, the most satisfactory soil for most herbs is rather meager and poor.

Also, with the exception of such herbs as the mints, cress, lovage, pennyroyal and angelica, which do best in rather moist locations, most herbs are best grown on a fairly dry soil.

Although most of the herbs produce the best specimens with desirable culinary and aromatic properties when grown under what would be considered rather poor conditions for most crops, the soil should be well prepared before planting. Best results can be obtained by loosening the soil to a depth of eighteen inches to two feet. All clods should be well broken up. Since many herb seeds are small, the surface of the seed bed should be finely pulverized, and special care should be taken that this is done if the seeds are to be sown in the open field.

Herbs require little attention after

AMERICAN NURSERYMAN

they have once become established. Cultivate only often enough to kill the weeds and to provide a fine dust mulch. Watering is necessary only in periods of severe drought. In general, herbs are remarkably free from insects and diseases.

With the exception of tarragon, chives, pennyroyal and the mints, which are always propagated by cuttings or divisions, practically all the herbs may be propagated from seeds. Since the seeds are often small and many of them are slow to germinate, it is usually well to sow them early in flats or shallow boxes, transplant into pots or flats when the plants are small and set outdoors as soon as growing conditions are favorable. This provides a longer season for the slower-growing kinds. Sow shallowly in the flats and cover with finely pulverized soil or sand. When planted directly in the field, radishes are often sown in the same row with slow-ger-

REFERENCE INDEX TO HERBS BY COMMON NAME, BOTANICAL NAME OPPOSITE.

alecost	Chrysanthemum	elecampane	Inula Helenium	partridge berry	Gaultheria procumbens
alkanet	Balsamita	endive, French	Cichorium Intybus	patience	Rumex Patientia
anchusa	Anchusa officinalis	estragon	Artemisia Dracunculus	pennyroyal	Mentha Pulegium
angelica	Anchusa officinalis		Foeniculum vulgare (and varieties)	peppergrass	Lepidium sativum
anise	Pimpinella Anisum (sometimes Myrrhis odorata)	fennel	Nigella sativa	peppermint	Mentha piperita; M. canadensis
apple mint	Mentha rotundifolia	fennel flower	Chrysanthemum Parthenium	pieplant	Rheum Rhabonticum
artemisia	Artemisia (several species)	feverfew	Foeniculum vulgare dulce	plants' physician	Anthemis nobilis
balm, lemon balm, bee balm	Melissa officinalis	finocchio	Digitalis	poppy, opium	Papaver somniferum
balm, bee; fragrant basil	Monarda didyma	foxglove	Fumaria officinalis	potherb	Portulaca oleracea
bay, bay laurel	Ocimum Basilicum; O. minimum	fumitory	Allium sativum	purslane, pusley	Campanula Rapunculus
benne, bene	Laurus nobilis	garlic	Chrysanthemum Balsamita	rampion	Rheum Rhabonticum
bergamot mint	Sesamum indicum	geranium, mint	Pelargonium graveolens	rhubarb	Barbarea vulgaris
bergamot, wild	Mentha citrata	geranium, rose	Teucrium Chamædryas	rocket or yellow rocket	Rosmarinus officinalis
borage	Monarda fistulosa	germander	Panax quinquefolium	rose moss	Portulaca grandiflora
boxberry	Borago officinalis	ginseng	Brunella vulgaris	roe	Ruta graveolens; R. chalepensis
burnet, burnett	Gaultheria procumbens	heal-all	Valeriana officinalis	saffron	Crocus sativus
camomile	Sanguisorba minor	heliotrope, garden	Ruta graveolens	sage	Salvia officinalis
capers	Anthemis nobilis	herb grace	Rumex Patientia	St. George's herb	Valeriana officinalis
caraway	Capparis spinosa	herb patience	Marrubium vulgare	salad, corn	Valeriana officinalis
cardo	Carum	hoarhound, horehound	Monarda didyma (sometimes Mentha rotundifolia)	samphire	Crithmum maritimum
carosella	Cynara Cardunculus	horsemint	Artemisia rusticana	santolina	Santolina Chamæcyparissus
catmint, catnep, catnip	Foeniculum vulgare piperitum	horse-radish	Hyssopus officinalis	sarsaparilla	Aralia hispida; A. nudicaulis
cat's valerian	Nepeta Cataria	hyssop	Artemisia Abrotanum	sassafras	Sassafras varifolium
celeriac	Valeriana officinalis	lad's love	Laurus nobilis	savory	Satureia hortensis; S. montana
chamomile, true	Apium graveolens	lavender	Lavandula spica; L. vera	secury grass	Barbarea præcox
chamomile, German	Anthemis nobilis	lavender, French	Santolina Chamæcyparissus	seives	Allium Schœnopræum
chamomile, rock	Matricaria Chamomilla	lavender cotton	Santolina Chamæcyparissus	self-heal	Brunella vulgaris
checkerberry	Anthemis cupiana	licorice	Glycyrrhiza glabra	sesame	Sesamum indicum
chervil, salad	Gaultheria procumbens	lovage	Levisticum officinale	skirret	Sium Sissarum
chervil, sweet	Anthriscus Cerefolium	lovage poppy	Papaver somniferum	sorrel	Rumex Acetosa; R. scutellatus
chervil, turnip-rooted	Myrrhis odorata	marigold, pot	Calendula officinalis	southernwood	Artemisia Abrotanum
chicory	Cherophyllum bulbosum	marigold, sweet	Tagetes lucida	spearment	Mentha spicata
chives	Cichorium Intybus	marjoram, annual; sweet; knotted	Origanum Majorana	spinage dock	Rumex Patientia
cicely, sweet	Allium Schœnopræsum	marjoram, pot	Origanum vulgare	succory	Cichorium Intybus
cleves	Myrrhis odorata	maw	Papaver somniferum	sweet mary, Sweet Marie	Chrysanthemum Balsamita
clary	Allium Schœnopræsum	mint (except mint geranium and mountain mint)	Mentha (see species)	tansy	Tanacetum vulgare
coriander	Salvia Sclarea	mint, mountain	Pycnanthemum virginianum	tarragon	Artemisia Dracunculus
corn salad	Coriandrum sativum	mother of thyme	Thymus Serpyllum	teaberry	Gaultheria procumbens
costmary	Nigella sativa	mugwort	Artemisia lactiflora; A. vulgaris	thyme	Thymus Serpyllum; T. vulgaris; etc.
cress, American	Chrysanthemum Balsamita	mullein	Verbascum (see species)	udo	Valeriana officinalis
cress, garden	Barbarea præcox	myrrh	Myrrhis odorata	verbena, lemon	Lippia citrifolia
cress, upland	Lepidium sativum	nasturtiums	Tropæolum (see species)	vervain	Verbena officinalis; V. hortensis
cress, water	Barbarea vulgaris	nigella	Nigella sativa	waldmeister	Asperula odorata
crummock	Nasturtium officinale	nutmeg flower	Nigella sativa	water mint	Mentha aquatica
cumin, cumin	Barbarea præcox; B. vulgaris	old man	Artemisia Abrotanum	wine plant	Rheum Rhabonticum
cumin, black	Sium Sissarum	old woman	Artemisia Stelleriana; A. maritima	wintergreen	Gaultheria procumbens
cumin, sweet	Cuminum odoratum	orange mint	Mentha citrata	witloof	Cichorium Intybus
dandelion	Pimpinella Anisum	Oswego tea	Monarda didyma	woodruff, sweet	Asperula odorata
dill	Taraxacum officinale	parsley	Petroselinum hortense (and varieties)	wormwood	Artemisia Absinthium; A. Stelleriana
dusty miller	Anethum graveolens			yarrow	Achillea Millefolium
elder, wild	Artemisia Stelleriana				
	Aralia hispida				

minating or small seeds to mark the row until the herbs come up.

Perennial herbs in most cases can be propagated by means of cuttings of roots or tops. Plants may be kept in the greenhouse during the winter and cuttings made early enough in the spring to have them rooted and ready for transplanting as soon as conditions are favorable.

Hardy perennial herbs usually require lifting and transplanting every three or four years, and frequently division of clumps is necessary at such times. Mints are divided with little damage by thrusting a sharp spade through the clump and transplanting the divided parts. Other perennial herbs may be divided in the same manner, but the practice is not to be recommended because the

plants receive a severe check and may become unsymmetrical.

Chives are divided by pulling apart the plants, which grow in a clump, and planting the individual plants separately. Such herbs as sage, thyme and savory are often propagated by means of layers.

While it is true that the propagation of most herbs is not particularly difficult to an experienced man, the amateur herb grower should be advised to buy plants in many cases. *Allium Schoenoprasum*, *Artemisia Dracunculus*, *Melissa officinalis*, *mentha* (all species) and *Rosmarinus officinalis* are excellent examples of cases where using plants is conducive to satisfactory results in the small herb garden. Also, many herb seeds are so slow or should be handled so

carefully to germinate properly that the amateur would better buy plants to set out.

Some herbs are cultivated as annuals, although either biennials or perennials, and these, together with the annual herbs, must be replanted each year.

The nurseryman, with his experience and equipment, can profit from these amateur difficulties by furnishing seeds, plants and advice.

Two lists are given herewith. The first is an alphabetical list of common names of herbs with the botanical name following the common one. By means of the botanical name, the herb can be located in the second list, which attempts to give pertinent information about each of the herbs contained therein.

INDEX TO COMMONER HERBS BY BOTANICAL NAME, WITH DESCRIPTIONS AND USES.

Achillea Millefolium, yarrow—per.; 1 to 3 ft.; fls. white; varieties *rubrum* and *roseum*, red or purple fls.
Allium sativum, garlic—bulbous; 12 ins. or less; purple fls. often replaced by bulbels.
Allium Schoenoprasum, chives, cives, cleves, selves—bulbous; to 2 ft.; fls. light purple, small and many in globular head; lvs. for seasoning; fertilize if cut heavily; mild onion-like odor and flavor.
Anchusa officinalis, alkanet—bien. or per.; 1 to 2 ft.; lvs. lanceolate, hairy; blue or purple fls. June-Oct.; effective in masses.
Anethum graveolens, dill—an. or bien.; to 3 ft.; lvs. finely cut; small, yellow fls.; seeds for seasoning; young lvs. in salads; vinegar as condiment.
Anthemis cupiana, rock chamomile—not in *Cyclopedia* or *Hortus*; Hutchins and Sando say per. to 6 ins. with white fls.
Anthemis nobilis, chamomile, camomile, plants physician—per.; to 1 ft. much branched; downy; finely dissected lvs.; white fls.; var. *grandiflora* larger fls., sometimes yellow; hardy border plant; substitute for grass.
Anthriscus Cerefolium, salad or leaf chervil—an.; 1½ to 2 ft.; aromatic lvs. used like parsley; some varieties have cut and curled foliage; needs partial shade; leafy tips and seeds, furniture polish.
Apium graveolens rapaceum, celeriac—bien.; to 3 ft.; small white fls. in compound umbels; grown for edible root crown.
Aralia cordata, udo—per.; to 8 ft.; young blanching shoots eaten like asparagus; ornamental.
Aralia hispida, bristly sarsaparilla, wild elder—per. herb or subshrub; to 3 ft.; Newf. to N. C. and Minn.; short woody stem; fls. white.
Aralia nudicaulis, wild sarsaparilla, small spikenard—per.; to 1 ft.; stemless or nearly so; fls. greenish; Newf. to N. C. and Mo.; rootstock for medicine.
Archangelica officinalis (*Angelica Archangelica*), angelica—bien. or per.; to 6 ft.; large foliage; large umbels of small white or greenish fls.; ornamental; stems and lf. stalks for salads; seeds for flavoring and for oil.
Armoracia rusticana, see *Roripa Armoracia*.
Artemisia, wormwood—a large genus of aromatic and bitter herbs and small shrubs; lvs. alternate, often dissected; yellow or whitish fls.; in west many species, particularly *A. tridentata*, known as sagebrush; grown for medicinal properties or foliage effects.
Artemisia Abrotanum, southernwood, old man, lad's love—shrubby; 3 to 5 ft.; pleasant-scented foliage; hedge plant; young shoots for flavoring.
Artemisia Absinthium, wormwood, absinthium—almost shrubby; 2 to 4 ft.; branchy; domestic vermicore; used for tea and for manufacture of absinth; dry lvs. as moth-repellant.
Artemisia Dracunculus, tarragon, estragon—per.; to 2 ft.; green and glabrous; lvs. for seasoning; oil and vinegar.
Artemisia lactiflora, mugwort—a white-flowered form of *A. vulgaris*.
Artemisia maritima, old woman—shrub to 2 ft.
Artemisia Stelleriana, dusty miller, old woman, beach wormwood—per.; to 2 ft. from woody creeping base; densely white woolly; heads large and many-flowered; fls. yellow; ornamental.

Artemisia vulgaris, mugwort—per.; to 3½ ft.; stems often purplish; lvs. white-edged; tiny beneath but soon green above; fragrant foliage; variegated and golden-leaved varieties.
Asperula odorata, sweet woodruff, waldmeister—per.; to 8 ins.; spreading; fragrant herbaceous; shady locations in moist soil; dried lvs. have hay-like fragrance lasting for years.
Barbarea praecox (*B. verna*), early winter, Bell Isle or American cress—bien.; to 2 ft.; distinguished from *B. vulgaris* by the more numerous divisions of the lvs., 4-8 pairs, and thickened pedicels; winter salad.
Barbarea vulgaris, common winter cress, upland cress, rocket, yellow rocket—bien.; 10 to 18 ins.; yellow fls.; variety *variegata* has lvs. splashed and mottled with yellow and is cultivated as a border plant.
Borago officinalis, borage—an.; 1½ to 2 ft.; coarse; hairy; handsome blue or purplish racemed fls.; potherb and salad plant; taste like cucumbers.
Borago laxiflora—small, decumbent alpine; hairy; purple or violet fls.
Brunella vulgaris, self-heal, heal-all—per.; to 2 ft.; purple or violet fls.; slight shade; too common in wild to cultivate; astringent and vulnerary.
Calendula officinalis, pot marigold—an.; 1 to 2 ft.; bright yellow fls.; many varieties grown by florists for winter bloom; flower heads for seasoning; flowers to color butter; florets as vulnerary and anti-emetic.
Campanula Rapunculus, ramplon—bien. or per.; 2 to 3 ft.; root spindle or long-radish-shaped, ½ in. thick, white; roots and lvs. eaten as salad.
Capparis spinosa, caper bush, caper tree—capers are pickles made by preserving flower buds of *C. spinosa*, a straggling shrub; spiny; to 3 ft.; often vine-like; variety *rupestris* is spineless.
Carum Carvi, caraway—bien.; 1 to 2 ft.; finely cut, pinnately compound foliage; small white fls. in umbels; seeds for flavoring; young shoots and lvs. for salads; foliage is ornamental.
Cherophyllum bulbosum, turnip-rooted chervil—bien.; like radish or carrot; roots, 4 to 5 ins. long, gray or blackish with yellowish white flesh; use like carrot.
Chrysanthemum Balsamita, costmary, mint geranium, sweet mary, alecost, erroneously called lavender—per.; 2 to 3 ft.; lvs. sweet-scented, oval, margin blunt or sharp teeth.
Chrysanthemum Balsamita, tanacetoides, Sweet Marie—like *C. Balsamita* but lacking its short white rays; this variety may be known by same common names as *C. Balsamita*.
Chrysanthemum Parthenium, feverfew—per.; 1 to 3 ft.; glabrous; strong-scented; used for edging.
Cichorium Intybus, chicory, succory, French endive, witloof—per. grown as an.; 3 to 6 ft.; deep-rooted; lvs. broadly oblong, hairy, rapidly becoming small toward top of plant so that branches appear nearly naked; fls. clearest azure blue of any, 1½ ins. across, closing at noon; masses are effective; used as potherb, salad and adulterant of coffee.
Coriandrum sativum, coriander (the seed-like fruit)—an.; 1 to 2 ft.; glabrous; strong-smelling; lvs. divided into almost thread-like divisions; small white fls.; seeds used like caraway.
Crithmum maritimum, samphire—per.; to 1 ft.; fleshy; glabrous; somewhat woody at base; lvs. are pickled.

Crocus sativus, saffron, saffron crocus—bulbous; purple gray fls. with vivid yellow stamens and orange scarlet stigmas; stamens used for coloring and to develop flavor; fls. ornamental.
Cuminum odorum (*C. Cuminum*), cummin, cummin—an.; to 6 ins.; untidy looking but used as edging plant because of small lilac flowers borne at tips of branches; seeds for flavoring and in curry powder.
Cynara Cardunculus, cardoon—per. treated as an.; to 6 ft.; thistle-like; blanching leaf stalks and ribs used as potherb; rich soil and abundant moisture.
Digitalis, foxglove—includes several species of ornamental value; *D. purpurea* being most common, bien. to 4 ft. and having several varieties with different colored fls.; medical preparations are diuretic, sedative and narcotic; decorative.
Foeniculum vulgare officinale, fennel, bitter fennel, wild fennel—bien. or per.; to 5 ft.; a carrot-like plant not usually cultivated.
Foeniculum vulgare dulce, finocchio, Florence fennel—an.; to 2 ft.; rather ragged in appearance but finely divided foliage and large umbels of small yellow fls. are somewhat ornamental; thick part of base boiled as vegetable.
Foeniculum vulgare piperitum, carosella, sweet fennel—per.; 3 to 4 ft.; young stems eaten raw.
Fumaria officinalis, fumitory—an.; 2 to 3 ft.; fls. purplish tipped with crimson; as ornamental surpassed by *Adlumia*.
Gaultheria procumbens, checkerberry, boxberry, teaberry, partridge berry, wintergreen—evergreen shrub, to 5 ins.; bearing 4 to 8 dark green oval lvs. 1 to 2 ins. long at end of each stem; fls. solitary, white; fruit scarlet; berries aromatic; lvs. have taste of wintergreen; ground cover or rockeries.
Glycyrrhiza glabra, licorice—per.; to 3 ft.; fls. pale blue; grown for root.
Hyssopus officinalis, hyssop—per. subshrub; to 18 ins.; fls. blue; good ornamental in hardy borders; green parts occasionally as potherb and with salads.
Inula Helenium, elecampane—per.; to 6 ft.; rather coarse; fls. yellow or orange, about 2 ins. across; roots thick and carrot-like and used in medicine.
Isatis tinctoria, dyer's woad—bien.; 1½ to 2 ft.; the woad that was used for blue prior to general use of indigo.
Laurus nobilis, laurel, sweet bay, bay laurel, bay—small tree, with stiff, dull green lvs.; yellowish fls. in early spring; succulent, purple fruits; an evergreen tub plant; lvs. used in cookery for aromatic flavor.
Lavandula Spica, lavender—dwarfier than *L. vera* and whiter; lvs. more crowded at base of branches.
Lavandula vera (*L. augustifolia*), lavender—per.; subshrub; 1 to 3 ft.; erect, numerous violet or silvery-blue fls.; fls. retain their strong fragrant odor after drying; decorative.
Lepidium sativum, garden cress, peppergrass—per.; 1 to 2 ft.; curled sorts have lvs. as finely cut as parsley; lvs. have pleasant pungency, used in salads, etc.; cool, rich soil; successive plantings to maintain supply; flea-beetles make field culture difficult.
Levisticum officinale, lovage—per.; to 6 ft.; leaf stalks blanching and eaten like celery; deep, rich, moist soil.

- Lippia citridora*, lemon verbena—shrub; to 10 ft.; lvs. have odor of lemon; fls. white; grow in temperature of 55 degrees and plant pots outdoors in summer.
- Majorana hortensis*, see *Origanum*.
- Marrubium vulgare*, hoarhound, horehound—per.; 1 to 3 ft.; white woolly stems and gray green lvs.; often used in per. garden; white fls. not particularly attractive; confections and medicines.
- Matricaria Chamomilla*, wild chamomile, German chamomile, sweet false chamomile—per.; to 2 ft.; glabrous, much-branched; heads 1 in. across with 10 to 20 white rays; tea.
- Matricaria inodora*, scentless false chamomile—similar to *M. Chamomilla*, but heads have 20 to 30 rays.
- Melissa officinalis*, balm, bee balm, lemon balm—per.; to 2 ft.; pubescent; odoriferous; fls. several in each cluster, yellowish or nearly white; for salads, etc.
- Mentha*, mints—mostly cultivated for aromatic oil obtained from all parts of plant; stems square; lvs. simple; fls. small, purplish, pink or white, crowded in axillary clusters in terminal spikes or heads; lvs. used as garnish, flavoring, etc. White woolly mint, lemon mint and pennyroyal are the most ornamental; first two are decorative and third is a good ground cover; moist, rich loam in partial shade.
- Mentha aquatica*, water mint—per.; to 2½ ft.; hairy.
- Mentha arvensis*, field mint, corn mint, wild pennyroyal—per.; to 2 ft.; produces runners.
- Mentha arvensis canadensis*, see *M. canadensis*.
- Mentha arvensis piperascens*, Japanese mint—per.; to 3 ft.; running rootstocks; stems erect, with numerous spikes or heads; lvs. and plant than *M. arvensis* and yields more oil.
- Mentha austriaca*, see *M. sylvestris*.
- Mentha canadensis*, American wild mint, erroneously called peppermint—per.; to 3 ft.; branched; running rootstocks; larger lvs. and plant than *M. arvensis* and yields more oil.
- Mentha citrata*, bergamot mint, lemon mint, orange mint—per. by leafy stolons; glabrous throughout; stem decumbent, 1 to 2 ft. long, branched; lemon-scented oil distilled for use in perfumes.
- Mentha piperita*, peppermint, brandy mint, American mint, state mint—per.; 1 to 3 ft.; branched; running rootstocks.
- Mentha piperita officinalis*, white mint—slender, 1 to 2 ft.; stems and foliage light-colored.
- Mentha piperita vulgaris*, black mint—rather stout, 2 to 3 ft.; stems usually purple and foliage dark.
- Mentha Pulegium*, pennyroyal—per.; prostrate, much-branched; variety *gibbatica* is a dwarf compact form with deep green foliage, sometimes variegated.
- Mentha Requienii*, Corsican mint—minute, creeping herb; peppermint-scented.
- Mentha rotundifolia*, round-leaved mint, woolly mint, apple mint, horse-mint—per. by leafy stolons, pubescent throughout; stems slender; 20 to 30 in.; sometimes used as a substitute for peppermint or spearmint. Variety variegata with variegated lvs. used in low borders.
- Mentha spicata*, spearmint—per. by leafy stolons; stem erect; 1 to 2 ft.
- Mentha sylvestris*, white woolly mint—lvs. sessile, white-tomentose beneath; ornamental.
- Mentha viridis*, see *M. spicata*.
- Monarda didyma*, horsemint, Oswego tea, bee balm, fragrant balm—per.; to 3 ft.; fls. scarlet; color forms are varieties *alba*, *rosea*, *salmona*, *violacea superba*; rather coarse plants but striking in masses.
- Monarda fistulosa*, wild bergamot—per.; to 3 ft.; stem much more obtusely angled; fls. purple, usually not so numerous as *M. didyma*; color forms are *rubra*, *media*, *purpurea*, *molliis*.
- Myrrhis odorata*, sweet cicely, sometimes called myrrh, sweet chervil, anise—per.; 2 to 3 ft.; soft hairy or pubescent; sweet-scented; lvs. thin, soft 2 or 3-pinnate; fls. small, whitish, in compound umbel; interesting for graceful foliage; salads.
- Nasturtium officinale*, water cress—per.; prostrate or trailing; brittle soft shoots root in water or mud; thrives in pools, ditches, on stream margins; can be grown in frames where ground can be kept wet.
- Nepeta Cataria*, catnip, catnep, catmint—per.; to 3 ft.; densely downy; pale green; stem rather stout; lvs. heart-shaped, green above, whitish below; corolla nearly white, or pale purple, dark-dotted; blooms from July to Nov.
- Nigella arvensis*, fennel flower, black cummin, nigella, nutmeg flower, Roman coriander—per.; 1 ft. or more; fls. blue; whole plant or seeds in cookery.
- Ocimum Basilicum*, basil, sweet basil—per.; 1 to 2 ft.; some compact forms, others purplish foliage or crimped or wavy lvs.; clove-flavored foliage used as seasoning.
- Ocimum minimum*, dwarf bush, green bush or purple dwarf basil—probably a small form of *O. Basilicum*.
- Origanum*, Majorana, sweet, knotted or annual marjoram—per. but treated as an.; erect, branching; 1 to 2 ft.; pleasing odor; bitterish taste; seasoning.
- Origanum vulgare*, pot marjoram—per.; to 2 ft.; branching; highly aromatic lvs.; fls. pink or purple, in midsummer; seasoning.
- Panax quinquefolium*, ginseng—per.; to 1½ ft.; grown for export; 3 to 4 years before roots are ready to harvest; many medicinal properties.
- Papaver somniferum*, opium poppy, lovage poppy, maw—per.; 3 to 4 ft.; fls. 4 to 5 in. across; very variable in color, seeds, etc.; opium made from milky juice; seeds have no narcotic properties and are sold as maw seed for bird food; also produce oil.
- Polygonum graveolens*, rose geranium—per.; woody; to 3 ft.; fls. rose or pink veined with purple; leafy; rather heavy balsamic odor.
- Petroselinum hortense*, parsley—per.; to 3 ft.; var. crispum, curly or crisp leaf; filicinum, fern leaf; radicosum, turnip-rooted or Hamburg parsley; also double-curved, triple-curved, moss-leaved, etc.; seasoning, vegetable.
- Pimpinella Anisum*, anise, sometimes called sweet cummin—per.; to 2 ft.; twice-pinnate lvs.; small, yellowish white fls.; seeds oblong and curved, the vein of caraway seed; salads, seasoning, vermifuge, etc.
- Portulaca grandiflora*, rose moss—per.; slender, prostrate or ascending; 6 to 12 in.; hairy in tufts at joints; six or more varieties by color of fls.
- Portulaca oleracea*, purslane, pusley, potherb—per.; to 1½ ft.; common trailing weed in sandy ground; cultivated in improved strains as potherb.
- Poterium Sanguisorba*, see *Sanguisorba* minor.
- Prunella vulgaris*, see *Brunella vulgaris*.
- Pulmonaria virginiana*, see *Pycnanthemum virginianum*.
- Pycnanthemum virginianum*, mountain mint—per.; 1 to 3 ft.; stem rather stout; lvs. fragrant; dry fields Canada to Ga. and Minn.; cultivated.
- Radicula Armoracia*, see *Roripa Armoracia*.
- Rheum Rhabarbarum*, rhubarb, pieplant, wine plant—strong per.; thick, clustered roots; to 2 ft.; flower stalks to 6 ft.; succulent leaf-stalks for pies, sauces and wines; several varieties.
- Roripa Armoracia*, horse-radish—stout per.; 2 to 3 ft.; hard, deep root; root-lvs. large and dock-like; deep, rich soil, retentive of moisture.
- Roripa Nasturtium-aquaticum*, see *Nasturtium officinale*.
- Rosmarinus officinalis*, rosemary—per.; evergreen shrub; 2 to 4 ft.; not hardy in Minn.; aromatic lvs.; seasoning, oil, Hungary water. Variety prostratus is the prostrate form.
- Rumex Acetosella*, garden sorrel—per., but sometimes an.; 3 ft. or more; early spring greens; later in foliage than *R. Patientia*.
- Rumex Patientia*, herb patience, spinach dock—per.; to 5 ft.; strong, erect; root leaves for greens in early spring.
- Rumex scutellatus*, French sorrel—per.; summer sorrel; cultivated for greens.
- Ruta chalepensis*, fringed rue—differs from *R. graveolens* in having fringed petals.
- Ruta graveolens*, rue, herb grace—per.; woody at base; 1½ to 2 ft.; lvs. fragrant, much-divided; fls. yellow; seasoning, flavoring, etc.
- Ruta officinalis*, see *R. graveolens*.
- Salvia officinalis*, sage—per.; treated as an. in north; 6 to 12 in.; white woolly subshrub; common and variable species; variety *tenuior* commonly cultivated as kitchen herb; variety *purpurascens*, somewhat reddish foliage, preferred in England; usually propagated by seeds, except Holt's Mammoth, which must be propagated by division or cuttings.
- Salvia Sclarea*, clary—per., but cultivated as an. or bien.; 2 to 3 ft.; fls. insignificant, but colored bracts or floral lvs. at tops of branches are attractive; several varieties; culinary and medicinal uses.
- Sanguisorba minor*, burnet—per.; 1 to 2½ ft.; grows in clumps; glabrous or sparsely hairy; interesting for hardy border; lvs. taste so much like cucumber that burnet vinegar is used with salads to give cucumber flavor.
- Santolina Chamaecyparissus*, lavender cotton, French lavender—per.; 1½ to 2 ft.; half-shrubby, much-branched; evergreen, silvery gray lvs.; small globular heads of yellow fls. in summer; valuable for its distinctive foliage.
- Sassafras varifolium* (*S. officinale*), sassafras—tree to 60 feet; deciduous; hardy; light soils in sun; light green foliage turns orange yellow in autumn; light red in autumn; decorative, bright colored fruit; Me. to Fla. and Tex.; medicinal.
- Satureia hortensis*, summer savory—per.; about 6 in.; bushy; culinary uses; fresh lvs. rubbed on insect bites to take out sting.
- Satureia montana*, winter savory—per.; 6 to 12 in.; subshrub; woody at base; more bushy than *S. hortensis*; good ornamental plant.
- Sesamum Indicum* (*S. orientale*), sesame, benne, bene—treated as an.; 1 to 2 ft.; fls. pink or white, 1 in. long, with shorter upper lobes; white and black-seeded varieties; seeds sold as benne; oil from seeds known as benne-oil, gingill-oil or teal-oil or oil-of-sesame, colorless and does not easily become rancid, used in adulteration of olive oil, for cooking, etc.
- Slymbrium Nasturtium-aquaticum*, see *Nasturtium officinale*.
- Slum Sisarum*, skirret, crummock—per.; 3 to 4 ft.; glabrous; roots used as vegetable.
- Tagetes*, marigolds—mostly an.; strong-scented flowers; valued for blooms and used for cut flowers.
- Tagetes lucida*, sweet-scented marigold—tender per.; to 1½ ft.; fls. have more agreeable odor than other marigolds; sometimes used as substitute for tarragon.
- Tanacetum vulgare*, tansy—per.; 2 to 3 ft.; stem robust, leafy to summit; heads to 1½ in. across, yellow, numerous; variety *crispum* has lvs. more cut and crisped; seasonings; demand usually supplied by wild plants.
- Taraxacum officinale*, dandelion—bien. or per.; nearly stemless; variable; lvs. prized for greens; improved forms with big lvs. grown for this purpose, but common form furnishes most of supply.
- Teucrium Chamadrya*, germander—per. or shrubby; 1 to 2 ft.; good border plant for late summer bloom; fls. red purple or bright rose, with red and white spots, ¼ in. long, rather showy.
- Thymus*, thyme—small shrubs or subshrubs, mostly hairy; erect or prostrate plants with strong mint-like odor; most species are grown as ground cover on banks, in borders or rockeries; ability to persist in dry places and poor soils and the colored or woolly foliage of some species adapt them to a variety of uses; only the most common thymes are given in this list.
- Thymus aureus*, name frequently given to *T. Serpyllum aureus*.
- Thymus azoricus*, another name for *T. Serpyllum*.
- Thymus carnosus*—subshrub; about 9 in.; stems decumbent at base, otherwise erect.
- Thymus citriodorus*, lemon thyme—see *T. Serpyllum*.
- Thymus citriodorus argenteus*, trade name frequently used for *T. Serpyllum argenteus*.
- Thymus citriodorus aureus*, name frequently given to *T. Serpyllum lanuginosus*—about 3 in.; small roundish lvs. gray pubescent; good edging plant.
- Thymus lanuginosus*, see *T. Serpyllum lanuginosus*.
- Thymus nitidus*—shrub, short, erect.
- Thymus Serpyllum*, mother of thyme, creeping thyme—per. or subshrub; stems wiry, prostrate and rooting below, ascending erect above; runs wild; lvs. sometimes used for seasoning; very leafy plant; prized as evergreen edging.
- Thymus Serpyllum albus*—white-flowered form.
- Thymus Serpyllum argenteus*—silver-variegated lvs.
- Thymus Serpyllum aureus*—8 to 12 in.; golden-variegated lvs.; minor variation known as *T. Serpyllum aureus marginatus*.
- Thymus Serpyllum coccineus*—1½ to 3 in.; dark green lvs.; bright crimson fls.
- Thymus Serpyllum lanuginosus*—about 3 in.; small roundish lvs. gray pubescent; good edging plant.
- Thymus Serpyllum vulgaris*, lemon thyme—lemon-scented variety.
- Thymus vulgaris*, common thyme—per.; subshrub; 6 in.; erect; one broad-leaved form is called winter or German thyme; seasoning.
- Tropeolum nasturtium*—usually considered ornamental plants, but flowers, young lvs. and young fruits are often mixed in salads and young, green seeds are used in pickles for piquancy and as substitute for capers.
- Tropeolum majus*, garden nasturtium—strong-growing, climbing an.
- Tropeolum minus*, dwarf nasturtium—an.; not climbing.
- Valeriana officinalis*, garden heliotrope, common valerian, St. George's herb, cat's valerian—per.; to 5 ft.; glabrous; fls. numerous, whitish or pinkish; of lavender, very fragrant; spreads rapidly from suckers; variety *alba* has white fls.; *rubra* red fls.; medicinal.
- Valerianella eriocarpa*, corn salad, Italian corn salad—undesirable for northern climates; esteemed in warm climates because it does not run quickly to seed; distinguished from *V. Locusta olitoria* by lighter color of lvs.
- Valerianella Locusta olitoria* (*V. olitoria*), corn salad—per.; to 1 ft.; a cool season crop like lettuce; matures in 6 to 8 weeks; rather tasteless compared with lettuce.
- Verbascum mulleins*—hardy bien.; rarely per. or subshrubs; sometimes grown for ornamental for gray green foliage and colored fls.
- Verbascum Chaixii*—to 3 ft.; fls. yellow with purple woolly stamens.
- Verbascum nigrum*—2 to 3 ft.; fls. small, yellow with purple throat, stamens violet woolly.
- Verbascum olympicum*—3 to 5 ft.; fls. 1 in. across, bright yellow, stamens white woolly.
- Verbascum phoeniceum*, purple mullein—5 to 5 ft.; fls. purple or red, stamens purple woolly.
- Vervain*, vervain—per. or subshrub; diffused or sometimes creeping; rank high as garden annuals; clusters of showy and often fragrant flowers borne in constant succession from June until frost; vary from white through lilac and rose to purple and dark purplish blue, with shades of pink and pale yellow; sometimes used as ground cover under gladioli, lilies, etc., or in margins of shrubby plantations; large number of hybrids classified by color and habits of growth.
- Verbena hortensis*, garden vervain—per., but mostly grown as an.; soft, decumbent plant; more or less rooting; fls. pink, red, yellowish, white.
- Verbena officinalis*, vervain—erect per. to 2 ft.; rather stiff; wiry-branched above; escaped and weedy.

Work with Blight-Resistant Chestnuts

*Status of Experimental Breeding of Chestnuts by United States
Department of Agriculture—By R. B. Clapper and G. F. Gravatt*

The introduction of Asiatic chestnuts by the Department of Agriculture for experimental purposes was begun in the division of plant exploration and introduction (formerly the office of foreign plant introduction), but in later years this work has been taken over by the division of forest pathology, also in the bureau of plant industry. The early work in chestnut breeding was conducted by the late Dr. Walter Van Fleet, who was employed part time by the division of forest pathology for this purpose. It has been continued by the senior author in the government orchards at Bell, Md. The division of fruit and vegetable crops and diseases has cooperated in the chestnut orchard work, and C. A. Reed, of that division, has been making ratings of the various selections.

Numerous experimental forest plantings with Asiatic chestnuts have been made on national and state forests to test the value of these seedlings as a replacement for the American chestnut. Small experimental orchard plantings of various strains, coming from different localities in China, Korea and Japan, are being tested also in many states with the hope that selections from these trees will result in varieties that will combine blight resistance with good horticultural characteristics. Scions of approximately 100 varieties of the Chinese and Japanese cultivated chestnuts have been imported. In the spring of 1936 about 80,000 chestnut seedlings were distributed. About 15,000 were set out as forest plantings in national and state forests. Some of the trees were used by the soil conservation service; some were used by the biological survey for plantings as a source of game food. The Tennessee valley authority also has made plantings of many selections.

It is to be expected that the great majority of these seedlings will prove inferior as far as merit of nuts is concerned, but prospects appear favorable for as high a percentage of nuts of merit as is normally to be expected from any group of seedlings. Secondary kinds should be of value for forest, game and ornamental plantings

Dr. G. A. Zimmerman's account of his efforts to induce immunity to chestnut blight was printed in the issue of November 1, 1936, and provoked widespread interest and comment.

The accompanying article on blight-resistant chestnuts was delivered by Dr. G. F. Gravatt before the Northern Nut Growers' Association and it details the efforts being made to discover or to develop chestnuts with natural immunity to the blight.

or for stocks upon which to propagate selected varieties. The establishment of domestic sources of supplies of seeds in this country is one of the immediate objectives in connection with these plantings, as the introduction of seeds from foreign countries is attended by many difficulties as well as by the risk of bringing in new diseases.

Distribution of blight-resistant chestnuts by the bureau in the future will be reduced. Further introductions will be in connection with outstanding selections from different localities in Asia from which material has been procured in the past. Commercial nurserymen and seedsmen are now carrying Asiatic chestnut seedlings and seeds, and some of the state game and forest departments are growing chestnuts for distribution and planting.

The matter of determining whether a particular variety of chestnut is sufficiently resistant to the blight to receive a favorable rating is rather complicated. The final tests must be made where the trees are fully exposed to natural infection. Under such conditions many other factors tend to complicate the situation. Many Asiatic chestnut trees, apparently killed by blight, have been found upon investigation to have been killed by other agencies. Late spring freezes, which sometimes result in death of the cambium of chestnut trees with no outward symptoms of damage following the freeze, are especially confusing; such trees frequently remain alive for several months before finally dying and by the time they do die the blight has frequently become established in

the bark. When a tree is examined after having just died, as in July, the most certain way of determining whether blight is responsible for the death of the tree is carefully to study the bark for indications of characteristic fan-shaped mycelial development. If blight is the causal agent, these mycelial fans will be found in abundance in the affected area. These fans do not develop abundantly in bark that has been weakened by freezing. Impoverished soil conditions and late frosts that kill the buds weaken chestnut trees so that they are much more vulnerable to blight. Field mice, rabbits, grazing and other nonparasitical agencies have caused the death of a large percentage of trees.

In addition to chestnut blight, there are two other diseases which must be considered in the selection and breeding of chestnuts. The first is a group of closely related twig blight diseases caused by several fungi quite unlike the true chestnut blight disease. The fungi of this group are quite destructive to some chestnut selections, especially when the trees are young. The development of these twig blights is largely influenced by environment. The other disease is more or less well known by those who have read of it in this country or have seen it in Europe, where it has caused the destruction of chestnut orchards in France, Italy and Spain. It is known as the ink or phytophthora root disease. Fortunately, the Japanese and hairy Chinese chestnuts are quite resistant to this disease and are being extensively planted in Europe in areas where the European chestnut has been killed by it. The same or a related fungus is present in this country. It is the most probable cause of the extensive destruction of the American chestnut and chinquapin trees in the southern states, which occurred before the blight reached that region. This fungus is present from New Jersey south and west to Louisiana, but has not yet been reported in Texas. It kills the American chestnut and chinquapin trees under natural conditions as well as by inoculation. As this disease is difficult or impossible to control once it becomes established in

an orchard, rootstocks for chestnuts should be of resistant species, such as the hairy Chinese chestnut. In preliminary tests, the Japanese chestnut has been found to be less resistant to this disease than has the hairy Chinese chestnut, but further experimentation will be necessary before this difference can be definitely established. The use of hybrid nuts resulting from crosses of either American sweet chestnut or chinquapin for production of grafting stock is undesirable, because of their susceptibility to both this root disease and chestnut blight.

It will be appreciated if persons having good chestnut seedlings which appear to be blight resistant will send nuts from such trees to C. A. Reed, bureau of plant industry, Beltsville, Md., for rating. Scions of the more promising sorts will be procured later for further testing.

Breeding chestnuts by crossing the several species and varieties is being carried on and expanded by this division. Approximately 3,000 controlled hybrids have been produced since 1925. Most of these are first-generation hybrids. Controlled second-generation hybrids of selected crosses are being obtained as rapidly as possible.

Many species and varieties of chestnuts and chinquapins are being grown at Bell, Md., for hybridizing purposes. The Asiatic species, which, in addition to the American chestnut and chinquapin, have been used in this work, are the Chinese hairy chestnut, *Castanea mollissima*; the Chinese timber chinquapin, *C. Henryi*; the Chinese dwarf chinquapin, *C. Seguinii*, and the Japanese chestnut, *C. crenata*. Of the last there have been many varieties of forest and orchard types.

In most plant breeding work a second generation of hybrids is desired in order to obtain a recombination of characters. The self-sterility of most varieties of chestnuts increases the difficulty of obtaining controlled second-generation progeny. There are three methods by which a second generation of chestnuts may be obtained. One of these is to isolate selected trees of the first-generation cross and allow them to intercross naturally. In large-scale breeding work this method requires considerable land. Another method is to intercross, by hand, selected trees of the first generation. This method is being used, but only small populations of the second generation are obtain-

able, as young trees ordinarily bear few pistillate flowers. Both of these methods represent the nearest practicable approach to selfing chestnut. Back crossing is the third method of obtaining a controlled second generation and is satisfactory, especially if the parent trees are available and mature. By this method pollen is taken from a selected first-generation tree and placed on the pistillate flowers of the selected parent tree. By back crossing in this manner, a fairly large population of second-generation hybrids may be obtained with comparatively little pollen from a young tree which may not yet be producing pistillate flowers.

TREE INJECTIONS.

The attempts to control insects and diseases by injecting various chemicals into trees has long interested Prof. A. G. Ruggles, Minnesota state entomologist, and, since 1910, he has been in touch with much of the work with "injecticides" that has been done in this country.

Underlying these attempts is the idea that, by injecting different substances into trees, something can be found to kill any insect or fungous growth in or on the tree.

When Prof. William Moore was with Professor Ruggles at the University of Minnesota farm, the two men bored holes in oak trees, injected potassium cyanide in the holes and plugged them up. The immediate incentive for using this material was that a professor in a more westerly state had reported that this procedure in peach trees had given wonderful success in the control of scale insects. The experiment with the oak trees showed that no appreciable amount of the material was absorbed.

Later a chemical from a southern firm was put on the market in the form of a red tablet. If the tablet were put in a tree it was asserted that no insects and no tree diseases would affect that tree. The same two men experimented with this material on a number of apple trees at the university farm and found that the material was not absorbed, nor could they find the slightest effect on the trees.

In experimental work along this line, trees have been made to take up all sorts of materials and in quantities. These materials, however, are never equally distributed over the tree and rarely, if ever, get out into the

leaves and smaller twigs. No chemical that a tree will take up has yet been discovered that will kill the insect or disease without killing the tree. The forest insect division of the United States bureau of entomology has found that zinc chloride can be injected into a dying tree in sufficient quantity to kill insects in the wood and prevent other insects from attacking, but the tree is killed in the process.

The only cases where plants have been made to absorb chemicals in sufficient quantities to kill the pests feeding on them are the following: The potato when sprayed with Bordeaux mixture is said to take up the copper of the mixture into certain cells of the plant on which the leaf hopper feeds and the insect feeding there is killed. The bean plant when watered with a pyridine liquid has been shown to take up pyridine in sufficient quantity in certain of its cells to kill the aphid feeding on these cells. So far as Professor Ruggles can find out, these are the only two plants in the world that have been shown to absorb chemicals in sufficient quantities to kill any insect feeding thereon.

It is perfectly natural to think that, because trees can be fed fertilizers which are taken up and because the potato and the bean plants do such things, something will be found which can be injected into a tree to kill parasitic forms of life. Unfortunately, there seem to be no immediate hope for such a discovery, and any suggestion that such a treatment is practicable must be looked on with disfavor at present.

TREAT FOR PEACH BORER

To protect the peach trees that have survived the recent severe winters, as well as to safeguard young trees against attacks from the peach tree borer, treating all peach trees is recommended this spring with paradichlorobenzene, or "P. D. B.," or "Paracide," as it is popularly known, either in dust form or as an oil emulsion. Spring treatment should be completed by the middle of May.

The so-called "crystal-ring" method of application, widely used for many years, is a rather laborious procedure, and a new method of application whereby the insecticide is applied in an emulsion of cottonseed oil has proved quite satisfactory in commercial plantings.

Native Plants of Garden Value

*Seventh in Series of Articles on Neglected Opportunities
for Nurserymen in Native Material—By C. W. Wood*

The genus *douglasia*, which is a member of the primrose family, is closely allied to both *primula* and *androsace*. In fact, it might just as well be included in the latter so far as the gardener is concerned, for it differs only in a few minor characters, such as having true branches, even though they are short and densely clothed with leaves, giving the appearance of an absence of this feature as in *androsace*, and in some flowering and fruiting characteristics. Like *androsace*, it is to be approached with a certain amount of caution, because none of the eight or more species I have grown is to be considered easy to grow. They are on a par in this respect with the *aretian androsaces* and require infinite attention under conditions in lowland gardens.

According to my experience, which ended three or four years ago because of the care *douglasia* needed in my dry garden, all its species require the so-called wet moraine treatment. This treatment includes a soil made up of sand, leaf mold and peat in which a generous quantity of stone chips is incorporated, and a constant supply of water, preferably moving, at the roots of the plants. If you have customers who can take care of this class of material, *douglasia* offers an excellent field for exploitation and one in which little competition will be encountered.

The following native species, all inhabitants of our western mountains, are available in seeds or plants: *Douglasia dentata*, violet flowers, three to six flowers on a 3-inch stem, said by some botanists to be a form of *D. nivalis*; *D. laevigata*, rosy pink, three to seven flowers on each 2-inch stem, one of the loveliest; *D. montana*, rose, a single flower to each 2-inch stem, appearing to differ in color and height, according to the particular mountain the stock comes from: *D. nivalis*, soft pink in the type, three to seven flowers to the stem, flowers carried an inch above the compact foliage masses.

Dryas.

After worrying over the eccentricities of the preceding, it is a pleasure

to turn to the *dryas*, desirable members of the rose family. Although not entirely foolproof, the species of *dryas* should give little trouble anywhere except in the hottest parts of the country and they might do well even there if given shade and water during dry weather. Here in the north they seem to grow well in almost any spot that is not too desert dry, perhaps a little better in what gardeners call dappled shade. They are among the best of easily grown creepers for rock garden planting, depending not entirely upon their white or yellow flowers for their charm, for their shining evergreen leaves are of year-around value and their fluffy seed heads, on the order of an alpine anemone, are ornamental.

The two species most readily available, *Dryas Drummondii* and *D. octopetala*, are as good as any. The first has bright yellow flowers, while the flowers of the other are creamy white at first and later become almost pure white. These two, their hybrid *D. Suendermanni* and *D. tenella*, a smaller, white-flowered form from the arctic regions, are all of easy culture, but *D. integrifolia*, which comes from the high altitudes of arctic America, requires far too much attention when others of equal beauty are available.

The *dryas* may be grown from seeds, which are slow to germinate and are best sown in autumn in an outdoor frame; from division of the stems, which often root as they creep over the ground, and from cuttings.

Echinacea.

These much-named composites are entered here as *echinacea*, because that is the name under which they are generally known in nurseries, though Gray's *Botany* prefers to call the genus *brauneria* and some authorities persist in retaining *rudbeckia*. Be that as it may, there is good garden material here, for, although somewhat coarse, the *echinaceas* bloom during July and August when color is needed. They grow naturally at times in quite lean soil, but best results in the garden will never follow that kind of treatment. On the other

hand, a rich soil in a sunny location and a fair amount of moisture will give spectacular quality. They are easily grown from seeds or divisions.

The most important member of the genus, from the gardener's standpoint, is *Echinacea purpurea*. This is a 3-foot plant, generally bearing reddish purple flowers for two months in mid-summer. A variety, *grandiflora*, has flowers much improved in size and comes quite true from seeds. America knows little of the good named forms which adorn European gardens, such as *Abendsonne*, a variety which is described as having flowers three times as large as the type; *Rose Queen*, a deep rose, and *Taplow Crimson*, deep crimson.

Empetrum.

The crowberries, *empetrums*, are low, heath-like shrubs with evergreen leaves, rather inconspicuous flowers and generally showy fruits. Perhaps they should not find a place in these papers on herbaceous plants, but they do deserve the attention of growers of native plants. *Empetrum nigrum*, the crowberry of common speech, is the best known of American species, growing over much of the country north of the southern Great Lakes region. It is a small, evergreen shrub, rarely exceeding four inches in height, with small, purplish flowers in April or May, followed by black fruits in August and September. *E. atropurpureum*, held by some to be a form of the preceding, is more of a trailer and has reddish to purplish fruits. It is restricted to the extreme north-eastern portion of the United States, and adjoining territory in Canada. The showiest of all the crowberries that I have seen is *E. Eamesii*, with its pink to light red fruits. It is found in eastern Canada from Labrador southward. While on the subject of these heath-like shrubs it may be well to include *Corema Conradii*, a closely allied plant. It attains a height of two feet or so, its male flowers with their long, exerted stamens being really showy. It is found on pine barrens from New Jersey to Newfoundland.

All the plants mentioned under this

heading do well in an acid soil that is not too dry and seem to prefer a rather cool situation. Fresh seeds sown outdoors in autumn usually germinate freely, but the plants grow quite slowly. For that reason most growers prefer vegetative propagation, using cuttings of current-season wood that is nearly ripe. They should be taken in late summer and handled under glass.

Epigaea.

The most elusive, the loveliest and the most desirable of native evergreen ground covers is *Epigaea repens*, the trailing arbutus of song and legend. The successful propagation and culture of this plant have long been secrets and even now there is a great deal left undiscovered, though we know enough about it to handle the plant at a profit. Owing to the fact that the natural supply of plants is exhausted in many parts of the country where it formerly was a familiar thing and that it is so near the point of exhaustion in many parts of its range as to cause enforcement of laws against collecting it, the plant now offers the commercial propagator a splendid opportunity.

More to verify the schedule of operations recommended by the late Dr. Frederick V. Coville, of the United States Department of Agriculture, than for any other reason, I have grown this plant from seeds and find it entirely practical in a commercial way. This growing program, or one of its modified forms, as worked out by other investigators, may well be the basis of future propagating methods.

Dr. Coville's method is abridged as follows from the original text: The seeds should be sown as soon as they are harvested, in a mixture of two parts finely sifted peat and one part clean sand in well drained flats. Cover the seeds with one-sixteenth of an inch of the same mixture. Dr. Coville recommended watering with a fine hose, a plan that is quite all right if carefully done, but I had more satisfactory results by watering from the bottom. In any case, water the flats thoroughly, cover them with glass, and set away in semidarkness; one watering is probably all that will be needed before germination of the seeds, which should take place in three or four weeks. Water containing lime should never be used on this plant; bog water is to be preferred,

but rain water may be used with satisfaction.

About four or five months after planting the seeds, or when the plants are three-eighths to one-half inch in diameter, they should be potted up in 2-inch pots, in the peat and sand mixture specified before. If a cool greenhouse is available, they may be carried through the winter there; if not, a coldframe may be used. The plant is ironclad hardy and does not need even frame protection, but such handling hastens growth—greenhouse culture is even more expeditious—and consequently shortens the time between seeding and flowering. Some of Dr. Coville's plants bloomed in eighteen months, but frame-grown plants usually take two and one-half years and sometimes three and one-half. The protection of a lath screen is better for old plants and is a necessity for seedlings.

Dr. Coville's long association with the blueberry and trailing arbutus led him to the conclusion that the mycorrhizal fungi found on and in the roots of these plants are a part of their system of nutrition. They are, of course, an essential factor in their successful cultivation and must be protected during transplanting. And it is for that reason, among others, that the plants are best handled in the nursery in pots; otherwise this disturbance of the roots at transplanting time is a decidedly limiting factor.

Here is a plant that holds vast possibilities in the hands of careful growers. Perhaps the time will come, as it has to most other nursery items, when the supply will overstep the saturation point, but that is not likely to happen soon, even though one grower reports having 15,000 plants in his nursery.

TWO NEW DAY LILIES.

Saturn and Circe are the names given to two outstanding yellow day lilies that have been obtained by selective breeding and hybridization by Dr. A. B. Stout at the New York botanical garden. They have been propagated by the Farr Nursery Co., which will introduce them this spring.

Saturn was obtained after several generations of selective hybridizations, which involved as parents *Hemerocallis flava*, *H. fulva* clone Europa, a wild plant of *H. fulva* from Japan and *H. multiflora*. The general

habit of the plant is that of an erect *H. multiflora*, only more robust and with larger flowers of delicate fulvous colors. At New York the period of blooming has been from about June 15 to July 15. The foliage is nearly dormant in winter. The scapes are much-branched and stiffly erect to a height of from three to four feet. The flowers are numerous, about three inches across, widely spreading and full; the throat is apricot-yellow; the petals have an eye zone of vinaceous rufous, beyond which is an area of ochraceous orange, and there is a marginal border of almost clear apricot-yellow. The sepals are somewhat less strongly eyed and they are reddish fulvous on the back. The marginal band of paler color in the open flower is somewhat more noticeable than in other seedlings or named clones.

Circe was selected as an especially attractive plant from a large number of somewhat similar seedlings which have yellow flowers and bloom in early and mid-July. The stiffly erect, somewhat branched scapes are from three to four feet tall. The flowers are full, about three and one-half inches in spread and light yellow or almost lemon yellow in color. In its particular combination of characters the Circe day lily does not closely resemble any of the various yellow-flowered named clones in bloom at the same time. The ancestry comprises six generations of selective breeding with hybridizations that include *Hemerocallis flava*, *H. fulva* clone Europa, *H. Thunbergii* and *H. aurantiaca*.

BECAUSE articles in these columns often contain material of interest to private growers, copies of the *American Nurseryman* are sometimes shown to their customers by subscribers. It is important, however, that copies do not go out of nurserymen's hands, because persons not entitled to them may write for wholesale price lists. While advertisers are careful in replying to such inquiries, some lists may slip through, with consequent receipt of orders not desired by the wholesaler and a loss of business to the retail nurseryman. The publishers seek to confine the circulation of the magazine to the trade, and subscribers' assistance in this direction will be appreciated.

Irrigation for Nursery and Garden

Twofold Problem Faced by Nurserymen, in Supplying Water for Crop Production and on Customers' Grounds—By W. H. Coles

The approach to the subject of irrigation by a nurseryman must be made from two angles.

As a grower he meets specific problems, and these are adequately cared for by distinct types of watering equipment. The better and larger nurseries recognize that even in the humid regions of the United States it is almost fatal to depend solely upon nature's water supply. The success or failure is largely determined by irrigation. The devices and equipment have been developed to a point where they are adequate and effective.

The nurseryman, however, is equally concerned in the watering of the grounds which he plants. The success of a planting frequently is determined by the ability to water it adequately. This calls for a different kind of equipment. An overhead sprinkling line, which is most effective in a nursery, would be unsightly on the lawn or the gardens of the private estates.

The problems, therefore, are twofold. Nevertheless, the principles that are involved in every case are fundamental and are as rigid in their operation as are many of the other laws of nature. An observance of them determines the success of an irrigation system. Lack of conformity spells failure.

Rainfall Map.

Rainfall over the United States varies from the maximum of 100 inches per year to a minimum of about five inches per year. A glance at the rainfall map is interesting. Twenty inches of annual rainfall represents the least amount of rain with which even ordinary farm crops can be grown with even a possibility of success. The line of 20-inch rainfall runs almost vertically from southern Texas through Oklahoma, Nebraska and the Dakotas.

To the east the lines of increasing rainfall diverge as a fan, and most of the northeast section of the country has from thirty-five to forty-five inches of rainfall. The amount of rainfall increases to the east and to the south.

West of the division the rainfall chart shows another series of fan-shaped lines which are constantly decreasing. In areas immediately east of the Pacific coast range as little as five or six inches of rainfall per year is the average.

East of the line of 20-inch rainfall is known as the humid region. West of this line the territory is considered as arid or semiarid. In the humid region irrigation is supplemental. In the arid and semiarid regions it is absolutely essential, even to the growing of the ordinary farm crops. We, of course, are concerned primarily with the humid region, representing twenty inches of rainfall or more.

Drought.

In south Jersey a 20-year record was kept showing the number of droughts during the growing seasons. In that region the annual rainfall is about forty-five inches. In twenty growing seasons there was a total of 127 droughts of longer than ten days. Of these one drought was more than fifty-three days, eight droughts were from thirty to fifty-three days, forty droughts from fifteen to thirty days and the remainder from ten to fifteen days. It is ordinarily considered that a drought of more than ten days is injurious to growing crops. The foregoing statistics merely show that even in the humid region, with much more than the average rainfall, nature requires supplemental irrigation in order to assure adequate growth. In some instances the irrigation will merely enhance the beauty of the

growing plants. In others it prevents complete destruction.

Water in Growing Things.

Few people recognize the large water content of plants. It is safe to say, except for the wooded plants, that most growing things contain more water than does high-grade milk. In many instances the water content of a plant is greater than ninety per cent.

It should also be recognized that plants take their food in liquid form. The water is absorbed by the roots. Part of it is retained by the plant, and the remainder is breathed out into the air. It is a recognized fact that in most plants from 300 to 500 pounds of water must be taken up by the plant in order to add one pound of solid matter to the plant itself.

When the above facts are recognized, the importance of adequate watering cannot be overlooked. It is for this reason that irrigation has come to take such a prominent place in the horticultural field.

Types of Irrigation.

Irrigation is divided into several distinct groups, as follows:

FLOODING IRRIGATION: In many growing centers, particularly where the cruder methods are employed, the water is merely flooded on the ground. In some sections of the west this is a common practice. In Mexico it is almost universal. Nevertheless, it is one of the crudest forms of irrigation. However, we saw the campus of one of the largest state universities in the far west irrigated in this way. For practical growing sometimes the water is flooded between rows. In other instances levees are built around the plot and the area is filled with water.

SUB-IRRIGATION: In certain sections of the country where there is a hardpan subsoil, tiles are laid on top of this subsoil and water is flowed into the tiles. This water spreads over the impervious hardpan, gradually works its way to the top of the ground and under certain conditions forms an adequate irrigation system. In a few instances this has been used

Those attending the recent nurserymen's short course at Cincinnati, O., found so illuminating the comments on irrigation problems, illustrated with slides, by H. L. Kauffman, of the Skinner Irrigation Co., that this summary has been obtained for readers of the American Nurseryman from W. H. Coles, head of the company and long known as an authority on irrigation for horticultural crops.

on lawns, but, to our knowledge, it has never proved practical. For commercial growing its success is dependent upon the existing conditions.

POROUS HOSE: This is a modified form of flooding irrigation. Light porous hose is used, and water is flowed into it. It leaks through the webbing in the hose and the water seeps onto the ground. It has all the characteristics of flooding or ditch irrigation, with the exception that the water can be more easily transported. It does not conform to the watering principles found in the more efficient forms of irrigation. Nevertheless, under some conditions it is an economical and a profitable method of watering where the needs are not particularly exacting. Its principal value is on crops where the cruder forms of watering are effective and on soils which will not carry the water effectively in trenches.

SPRAY IRRIGATION: This type of equipment divides itself into several distinct groups. The fundamental principle involved is the distribution of water through the air and spraying the ground from above. This has come to be the most popular and the most effective form of irrigation. Later the various methods will be described in detail, but here we briefly mention the fact that the spraying of crops is advantageous rather than injurious under most conditions. The methods of distribution are practical, and this type of irrigation is coming to be recognized as best adaptable to almost every conceivable growing condition.

Principles of Irrigation.

The fundamental laws covering the application of water are rather simple, but none the less important. The success of irrigation systems has been largely determined by conformity to correct watering principles. Briefly, some of the more important factors are as follows:

FREEDOM FROM CAKING or packing the soil: Each character of soil has a capacity for absorbing water. If this capacity is exceeded, the water stands in puddles, and the soil runs together and cakes; frequently a crust is formed, which must be corrected by cultivation or otherwise will retard the growth of plants.

In some sections of northern California the soil is such that with

flooding irrigation a crust is formed which can be picked up in slabs and which would prevent growth on anything but the sturdiest crops. A system of irrigation which prevents caking and packing of the ground must apply water in finely broken drops and at a slow rate of distribution. With a correct water application the ground will remain porous and loose and in no way interfere with the growth of plants. This applies primarily to tender grass or to such crops as strawberries, of which the tendrils reach out and are unable to take a hold unless the ground is loose. In lesser degrees it applies to almost everything else that grows.

TEMPERATURE: Spray applied from overhead may chill the plant. If the water is distributed in large quantities or in large drops, this injury frequently occurs. A correct irrigation system will distribute water with such fineness that the chill will be lost as the drops pass through the air and the water settling on the plant will be tepid. Heavy streams, large drops or flooding violate this important principle.

EVAPORATION: The rate of evaporation is determined to some extent by the contact of the air with the water, but primarily it occurs from the ground. The moisture through a period of hours or days is dissipated from the soil. The rate of evaporation is almost entirely controlled by the condition of the surface of the soil. If the top ground is hard or caked, evaporation is rapid. If it is porous and loose, the evaporation is retarded.

An irrigation system, therefore, to be successful, should be one which will retain the loose porous condition on top of the ground, and again we meet the importance of light gentle watering which will not pack or cake the ground.

UNIFORMITY OF DISTRIBUTION: A chart indicating the relationship of growth to the application of water shows rather an unusual situation. In the lesser amounts the increase of growth is pronounced. After a given amount of water has been supplied, however, the line of growth straightens out and for quite a considerable period an increase in the water distribution has practically no effect on the growth. Then you come to the point where additional water retards growth. This, of

course, is accounted for by the fact that the air spaces are closed by the water and the ground is water-logged.

Within certain ranges a variation in the application of water is not particularly important. In excess of these ranges, however, it is vital.

The ability, therefore, to water uniformly is important and results in considerable differences in the yield. A system of irrigation should take this into consideration. Where small-rooted crops are involved the question of uniformity becomes more important, because each plant grows within a limited root area and unless it specifically receives water it will not thrive. To some extent the percolation of the water sidewise is effective, but this is far less than is ordinarily assumed.

CONTROL: Not only must water be distributed with a reasonable degree of uniformity, but it must be possible to place the water effectively where you want it, at the times you want it and for such periods as are desired; under certain conditions overhead sprinkling lines or lines along walks, fences or terraces in a private estate which water a rectangular area are essential. In other instances adaptations of various types of equipment can be used effectively. This should be considered carefully, however, and the type of equipment

HERBS

*Over Eighty Varieties,
many rare*

Pot-grown plants, easily shipped
25c each, \$2.50 per dozen

*Also DRIED HERBS for
flavoring and for fragrance*

Write for list

**The Cottage Herb Garden
of All Hallows Guild**

The Garden Guild of the National Cathedral
Mt. St. Alban, Washington, D. C.

HERBS

Pot-grown plants; over a hundred varieties.
Dried Herbs for Flavoring and Fragrance.
Other plants of unusual character and
with the charm of old-time gardens.

Write for Catalogue

WEATHERED OAK HERB FARM, INC.
BRADLEY HILLS, BETHESDA, MARYLAND

selected must be adapted to the conditions encountered.

Spray Irrigation.

The success of spray irrigation has not been accidental. An analysis of watering requirements and the principles of irrigation explain its effectiveness and its progress. In the earlier period of irrigation development criticism was made to the watering of foliage. For the last decade or two it has been recognized that the former objections were not so much the fault of applying the water to the foliage as the incorrectness of the method used.

In every growing section of the country spray irrigation has demonstrated its value. It not only supplies water uniformly, but does so without water-logging the ground. It also keeps the foliage clean. If the proper spray is used, there is no injury to the bloom. The earlier objections to spray irrigation have proved to be due to incorrectness of application. Experience has indicated that water on the leaf is not of itself necessarily injurious, but under some conditions, however, the watering should be done in such a way and at such times that the water will evaporate from the foliage quickly. It is the continued presence of water which causes most of the fungous diseases which have been attributed to irrigation.

Methods of spray irrigation are numerous. The more important are the following:

OVERHEAD LINES: A line is set above the ground at a height of from three to six feet, depending upon the crops grown. Throughout the line, nozzles are inserted in a straight row. These nozzles throw a continuous sheet of fine uniform gentle sprays. The line is set on roller bearing hangers and is oscillated on its axis so that the spray swings back and forth over a width of approximately fifty feet. The oscillation is done either by hand or by a water-driven device which accomplishes this automatically.

For the growing of nursery crops this type of irrigation is by far the most effective. It observes to the minutest detail the correct principles of watering and accomplishes the desired purposes.

On private estates these lines are quite frequently used along terraces and walks, on fences or laid on the ground along drives or walks. Quite

"PAINESVILLE NURSERIES"



This is our 83rd consecutive year.

Our Spring Catalogues
are distributed; see them,
both wholesale, and retail
descriptive.

We grow things
in **QUANTITY**;
of well proved
QUALITY.

Our prices are right.

Fruit Trees
Deciduous Trees
Evergreen Trees
Shrubs
Vines
Evergreen Shrubs
Roses
Small Fruits
Hardy Perennials
Greenhouse and
Bedding Plants
Bulbs and Tubers
SEEDS

Complete Nursery Supply 

The Storrs & Harrison Company
PAINESVILLE, OHIO

frequently they provide a simple inexpensive and effective method of watering of the highest efficiency.

CONCEALED IRRIGATION: A popular type of watering for lawns consists of the concealed system of piping laid in the lawn. This piping can either be steel, iron or copper. Over the lawn are set sprinkling heads placed at the ground level and covering such areas as will provide a uniformity of watering.

In some types of equipment the watering member rises as the water is turned on and the water is distributed from an elevation above the ground. The water member recedes into the outside casing when the water is turned off. In other instances the heads have no such movable member and the watering is done from the ground level. Usually in this instance it is advisable to have a head with a sufficiently large

ground plate to reduce to a minimum the interferences to the spray from the grass.

For larger units a somewhat similar sprinkling unit is provided, in which the watering head carries two nozzles, each of which throws a single fan-shaped stream. By a simple and effective mechanism these sprays are made to revolve slowly and these heads will cover areas ranging from fifty to 100 feet in diameter. The rate of distribution is lower than on the smaller heads previously described, and the cost of installation per acre is less. The principle, however, is the same and the method of installation similar.

In sprinkling equipment of this sort the entire installation is divided into units determined by the convenience of location, the character of the soil, the nature of the plantings, the relationship to prevailing

winds and, primarily, the pressures and water volumes available.

The units can be controlled by the turn of a single valve. In some instances this is done either by a push button or automatically. Under some conditions the automatic or push-button equipment is advantageous. In most instances, however, the older form of manually operated equipment is preferable. The watering requirements are so exacting under numerous situations that the mechanical equipment must be controlled by intelligent operators. Consequently, the personal element is often an important factor.

SNAP VALVE IRRIGATION: A still further type of irrigation is coming to be popular, particularly on large areas. For parks, cemeteries, large lawns, golf courses and the like, a hoseless irrigation equipment is rapidly growing in popularity.

An underground system of piping is utilized, similar to that for the underground concealed heads. Instead of the sprinkling heads, however, self-closing snap valves are used at the ground level. These valves are of a special design and of such a character that portable sprinkling units can be snapped into position. An entire system can be laid out with the water available and with the pressure existing at any snap valve throughout the system. A few sprinkling units can be moved from one valve to another and the insertion of the sprinkler opens the valve supplying it.

This type of equipment is cheaper than the concealed lawn heads. It involves a slight amount of attention and labor. The cost is much less and it permits of the use of more efficient sprinklers covering a larger area on a given volume and pressure.

When it is recognized that one man with from six to ten sprinkling units can water an entire 18-hole golf course at night, giving it one inch of rainfall a week, and can do this by using only a portion of his time, it is readily seen that the labor element is not an important factor.

General Types of Irrigation.

In addition to the foregoing three primary types of irrigation, numerous modifications are available. Sprinklers similar to the concealed lawn heads can be furnished for elevated positions in shrubbery. They can be mounted on risers over a garden, although ordinarily the water distribution is a little bit too rapid for most effective service on cultivated ground.

Various types of portable sprinklers are quite frequently used. An oscillating sprinkler, which is really a condensed form of the overhead sprinkling line and in which a 50-foot fan of spray swings back and forth, can be used either with a hose or mounted on a snap valve. This forms an effective means of economically watering the ordinary grounds.

Oscillating lines with the oscillator mounted on a tripod and the lines on stands can be used up to a length of 250 feet. Quite frequently it is practical to set these in a garden, water the whole garden at night, take the sprinkler down and move it in the morning.

For athletic fields underground heads have been provided with heavy rubber caps to prevent, as far as possible, accidents or injuries.

For polo fields snap valve installations are frequently used, placed six inches or so below the ground. From these a heavy rubber tube extends

AMERICAN NURSERYMAN

to the surface of the ground. When the sprinkler is in operation the unit mounted on an extension coupler is slipped down through the tube and connected to the self-closing valve. When the sprinkler is removed the valve closes automatically and a rubber cap can be placed in the sleeve opening.

This brief summary on the various phases of irrigation is nothing more than a compact digest. The science of irrigation has developed so rapidly the last few years that it is now available for almost every conceivable growing condition. Engineering staffs in connection with the better manufacturers are available to nurserymen who are desirous of assisting their customers in protecting their plantings against drought. The whole growing industry and thousands of estate owners are becoming "irrigation-minded." While the details are matters of vital importance, yet this article can only touch the high spots and give a general background onto which specific devices and individual methods of installation can be applied.

DANGEROUS DEFOLIATION.

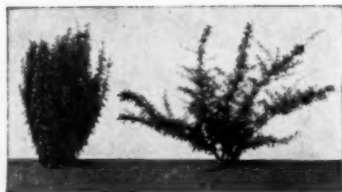
The effects of drought and defoliation in weakening shade trees are becoming more apparent as trees are given more attention, according to E. Porter Felt, of the Bartlett Tree Research Laboratories, Stamford, Conn.

In the late 1890's and early 1900's there was a series of exceptionally dry seasons, especially in early summer. Following this period many thousands of hickory trees were killed by the hickory bark beetle, the result of lowered vitality following years of drought. This was true also of ornamental birch trees except that the final

Truehedge Columnberry

Berberis Thunbergii Pluriflora Erecta

U.S. Patent
No. 110
Propagation
Rights
Reserved



New Truehedge
Columnberry

Common
Barberry

Compare these 2-year-old plants

The Plant Sensation of the Decade

The value of this wonder spire plant has been proven beyond a shadow of a doubt by the general acceptance of the trade. Over 500,000 plants being sold since introduction in the fall of 1934.

A rather limited supply is available for spring 1937. The established prices are as follows:

SIZE		WHOLESALE			RETAIL			
		Per 10	Per 100	Per 1000	Each	Per 5	Per 25	Per 100
9 to 12	inches.....	\$1.40	\$11.00	\$95.00	\$0.30	\$1.15	\$4.50	\$16.50
12 to 15	inches.....	1.75	14.00	125.00	.35	1.40	5.75	21.00
15 to 18	inches.....	2.20	18.00	160.00	.45	1.75	7.50	27.00
1 1/2 to 2	feet.....	2.50	24.00	210.00	.60	2.25	9.75	36.00
2 to 2 1/2	feet.....	3.75	32.50	.....	.75	3.00	13.75	50.00

The large complete book depicting the "Ready-Made" hedge is available upon request. Purchases may be made direct from the Cole Nursery Co. or from the following licensed distributors:

Adams Nursery, Inc., Springfield, Mass.
Bay State Nursery, North Abington and Framingham, Mass.
C. R. Burr & Co., Manchester, Conn.
Henry A. Dreer, Inc., Philadelphia, Pa.
Fairview Evergreen Nursery, Fairview, Pa.
I. E. Hignfrith's Sons Co., Monroe, Mich.
Jackson & Perkins Co., Newark, N. Y.
Lester C. Lovett, Little Silver, N. J.

Mount Arbor Nurseries, Shenandoah, Ia.
Princeton Nurseries, Princeton, N. J.
Shenandoah Nurseries, Shenandoah, Ia.
E. D. Smith & Sons Co., Winona, Ont., Can.
Stark Bros. Nurseries & Orchards, Co., Louisiana, Mo.
Storrs & Harrison Co., Painesville, O.
Wayside Gardens Co., Mentor, O.

WRITE for wholesale catalogue

The COLE NURSERY Company (Est. 1881) Painesville, Ohio

"Everything That's Good and Hardy"

CERTIFIED STOCK

Can ship anywhere.

All Evergreens	12 to 15 to 18 to 2 to				
B&B	15	18	24	2 1/2	
	ins.	ins.	ins.	ins.	ft.
Juniper, Savin	\$.40	\$.50	\$.70	\$.90	
Depressa Plumosa	.50	.60	.75	1.00	
Horizontalis	.40	.50	.60	.75	
	18 to 24 to 3 to 4 to				
	24 ins.	2 ft.	4 ft.	5 ft.	
J. Hibernica	\$.40	\$.50	\$.65	\$.80	
Arbor-vise,					
American	.45	.60	.70	1.00	
Pyramidal	.50	.60	.90	1.10	
Chamaecyparis					
Plumosa	.75	1.30	2.00		
Pisifera					
(or Aurea)	.45	.60	1.00	1.50	
Picea Pungens,					
green	.50	.75	1.00	1.25	
Snowberry, white,	.12	.14	.18	.30	
Red	.12	.15	.20	...	
Cornus Sibirica	.20	.25	.35		
Viburnum,					
Dentatum	.20	.22	.28	...	
Highbush					
Cranberry	.18	.22	.28	.35	
TREES	8 to 10 to 2 to 2 1/2 to				
Betula Popu-	10 ft. 12 ft. 2 1/2 in. 3 in.				
Hofolia	\$.00	\$.25	\$.50	...	
Elm, American	.60	.90	1.50	2.00	

Complete wholesale list on application. Well grown, first-class stock. Boxing at cost.

THE HIGHLAND NURSERIES, Johnstown, N.Y.

Up-to-date information
on germinating**TREE & SHRUB SEEDS**Dr. L. C. Chadwick's articles on
"Improved Practices
in Propagation by Seed,"
reprinted from American Nurseryman.

Price 25c (postpaid)

HERBST BROTHERS

92 Warren St. New York, N. Y.

Write for free Tree and Shrub Seed
Catalogue containing flower and vege-
table seeds attractively priced.**QUALITY LINING-OUT STOCK**Seedlings and transplants of 19
varieties of evergreens, maples,
nut trees and fancy shrubs for
spring delivery.**MATHEWS EGERT NURSERY**

Wholesale Growers

342 Apple Ave. Muskegon, Mich.

**Hybrid Tea Roses**No. 1 and No. 1 1/2, priced low.
Maiden Ros. Pink Dawn, Cata-
lonia. 25 other varieties. Write
or wire for complete list and
low prices.

MALONEY BROS. NURSERY CO., Danville, N. Y.

WHOLESALE GROWERSof a complete line of Nursery Stock in-
cluding Fruit Tree Seedlings.**Lake's Shenandoah Nurseries**

Shenandoah, Ia.

PRAIRIE STATES SEED CO.**Trees and Shrubs a Specialty**

Contract Collections

No order too small

KENNETH KOONCE

Box 602

Ames, Iowa

killing agent was the bronze birch borer. The death of the birches on lawns suggests that trees growing under such conditions are exposed to maximum drought effects. There was no such mortality of native birch trees.

Similar conditions prevail here and there with oaks along the northeastern seaboard, the precipitating causes being drought and repeated defoliation by cankerworms, or other leaf feeders, the final agent being the two-lined chestnut borer. Here a reduced tree vitality favored the borers, and in most cases damage was proportional to the defoliation. Repeated stripping of the trees during several years or even an almost complete defoliation in one season produces conditions favorable to attack by this borer.

The forest tent caterpillar was extremely destructive to sugar bush in New York state and Vermont early in this century, the repeated stripping weakening the trees seriously and resulting in the death of many. This insect was abundant in the Berkshire region and adjoining sections last year.

The above suggests that defoliation by insects or the loss of foliage by fungous diseases may be more serious than most people realize, in spite of the fact that a new crop of leaves usually appears within a few weeks. The production of these new leaves makes a draft upon the reserve vitality of the affected trees and produces conditions, as suggested above, which are favorable to the development of deadly borers.

FERTILIZER FOR EVERGREENS.

Most nurserymen have shunned commercial fertilizers for evergreens. They preferred manure even at a higher price. P. C. Marth and F. E. Gardner, of the bureau of plant industry of the United States Department of Agriculture, investigated the grounds for this prejudice and found that well balanced chemical mixtures are just as satisfactory and cheaper. But they also found some basis for the prejudice because of the tendency to apply too much concentrated food. Applications of chemical fertilizer high in nitrogen were as effective as manure, but heavy doses stunted the plants—caused something similar to indigestion from overeating of food too rich. Nurserymen frequently have failed with commercial fertilizers for evergreens because they gave the plants too much of a good thing.

..... a good supply of
SOUR and SWEET CHERRIES
APPLE — PEACH — PEAR
ORNAMENTALS — ROSES

FRUIT TREE SEEDLINGS
CHINESE ELM SEEDLINGS
DECIDUOUS SEEDLINGS

Write for **FALL TRADE LIST.**Will appreciate your **WANT**
LIST and INQUIRIES.**MOUNT ARBOR NURSERIES**

E. S. Welch, Pres. Shenandoah, Iowa

"One of America's Foremost Nurseries"

POLYGONUM AUBERTII

(Silver Lace Vine)

Per 100 Per 1000

2-year, No. 1.....\$18.00 \$160.00
2-year, medium .. 14.00 120.00Usual terms of credit
to those having credit
established with us.
Others, cash with
order.**THE KALLAY BROTHERS CO.**

Painesville, Ohio

**RETINISPORA PLUMOSA
NANA**Fine sheared specimens 18 to 36 ins.
Carload quantities—Priced for roadside
sales. Catalogue on request.**FAIRVIEW EVERGREEN NURSERIES**

Fairview, Pa.

Canterbury BoxwoodBuxus suffruticosa and B. sempervirens.
Selected uniform plants; bushy and foliated to
center; masses of fibrous roots. Finished speci-
mens from 4 inches up, ready for quick shipment.
Prices lower, plants larger. Ask for special list.
CANTERBURY, Box A, Easton, Md.**HILL'S EVERGREENS**Complete assortment of lining-out sizes
Also larger grades for landscaping
Send for our wholesale catalogue**D. HILL NURSERY CO.**

EVERGREEN SPECIALISTS

Largest Growers in America

Box 402

DUNDEE, ILLINOIS

**EVERGREENS**For Seventy years growers
of Quality Evergreens
Lining Out Stock a Specialty
Write for Trade List**EVERGREEN NURSERY CO.**

Established 1864 : STURGEON BAY, WIS.



Charlie Chestnut

Tells How Agents Bring In the Orders



The different nurserymen are after me to let out a few secrets about how to make a big success of selling stuff by having agents canvas everybody to take there order for stuff. We have got 2 mighty good agents that takes orders for our nursery. One is named Caspar Snodgrass. Caspar is close to 60 or 62 yrs. of age. He used to be a feller that sings at revival meetings until he kinda sung too loud and too long and now his voice is whispery and real sad-like. This gives him a big appeal with all the old ladies and accounts a little for his big success. He is a purty hard worker. His method is mighty clever so I will explain for the benefit of the other nurserymen that needs to have there own agents pepped up with the latest ideas. First he walks past the house looking straight ahead but all the time he is looking out of the corner of his eye sizing up the house. Then he walks back again and this time he paces off how far it is across the lot. After he has the sitchuation well in hand he goes right into the thick of the battle and rings the front door bell. First thing he says is, lady you sure have a mighty fine looking house, which I couldnt help but notice as I just happened to be passing by. He says I never seen so swell a place as your front yard for to put in 2 catalpa bungeys. He says you would sure have something to make your nabors gelous if you had 2 catalpa bungeys

which are imported from China at great expense. The regular price of these here beautiful genuwine bungeys is \$3.75 each but on account of my company is anxious to get some of the leading citizens of this town to using our stuff I will give you 2 for \$4.95 for the 2 and furthermore I will throw in free without charge a genuwine mulberry that will give you enough mulberrys to take care of your family and all the nabors to keep them in mulberrys all summer and winter. This idea is on account of that we must make everything have a practical value as well as to look good. This free mulberry just about puts the sale over except the lady says she has got to see her husband, when he gets home from driving the truck at the lumber yard and she says for Caspar to come again at quarter to 6. Of course Caspar has got to get going and cant come again at quarter to 6, so he will have to close the deal before the old man gets home. Caspar has found out that the men are generally too ornary to sign the order and it is better to get the Mrs. to do it. So Caspar says well lady my time is valuable and I can not come back at quarter to 6 but I'll tell you what I will do. I see that you have some bees and I will take 95c worth of honey on acct. and you can just pay the \$4.00 next spring when the bungeys is delivered to the livery barn. The Mrs. says well I can save \$4.00 out of my egg money by

next spring and then I can have a big surprize for my husband. And so the deal is signed up. The catalpas cost the nursery 45c and Caspar can sell them for \$1.79 if he gets into a spot where the other nurserymen is selling stuff too cheap. You have got to give a little leeway to the agent to allow for cutting down the price. Caspar can average about \$3.75 per day on the canvas, which as Caspar says is better than he used to make at the singing job and besides he has a chance to see the country, as he has all of this country and a part of the next one.

The other agent is a big success too but his tecnique is altogether different but then the agents is different too. His name is Henry but everybody calls him Hank. Hank is 49 yrs. of age and he is a large heavy man. He always wears a big watch chain and a derby. Hank says appearance counts for a lot in the nursery business. Hank used to work at the depot, thats where he got the notion of being an agent on acct. of a lot of stuff that come from a mailorder house one spring C. O. D. and laid at the depot all spring until Hank got orders from the claim agent of the R. R. to get out and sell the stuff. He sold all the stuff at the lodge meeting and this give him the idea to give up the work at the depot and go to work on the canvas for the nursery. Hank carries a big box full of pins and badges. He has badges of all the fraternal, relegious, civic and farm organizations of the country. He always finds out if the prospect is an Elk, a Lion, a Mason or a K. C. Then

Fruit Tree Prices Reduced

APPLE—In lots of 50 or more

	1-YEAR WHIPS			2-YEAR BRANCHED	
	2 to 3 ft.	3 to 4 ft.	4 to 6 ft.	3 to 5 ft.	4 to 6 ft.
Ben Davis	160	105	16c	15c	20c
Bonum	...	...	...	35	10
Delicious	220	...	...	600	350
Duchess	...	130	...	...	130
Early Harvest	40	230	130	...	...
Grimes Golden	...	60	280	490	140
Hyslop Crab	...	...	...	70	40
Jonathan	35	...	...	110	...
King David	40	...	10	...	40
*Lowry	320	230	30	750	540
Maiden Blush	...	...	...	150	40
Milton	20	20	10	...	...
*New Red Delicious	990	890	2440	2730	1780
*New Red Duchess	190	370	74	...	37
*New Red Jonathan	870	1370	80	870	840
*New Red Rome	100	...	50	150	...
*New Red Stayman	490	95	360	1100	860
Newtown Pippin	390	660	40	30	50
Paragon	...	130	240	90	280
Red June	...	...	...	80	...
Stayman	...	...	870	...	...
Summer Rambo	...	12	240	...	...
Sweet Paradise	40	10	...	...	...
*Turley	665	260	50	730	680
Winosap	545	40	...	710	545
*Yellow Delicious	90	400	1195	80	...
Yel. Transparent	265	290	270	20	...

NOTE: * Varieties 5c extra per tree

PEACH—In lots of 50 or more

	18 to 24 ins.	2 to 3 ft.	3 to 4 ft.	4 to 6 ft.
	5c	7c	10c	15c
Alton	...	75	...	...
Belle of Georgia	800	100	275	465
Brackett	50	100	410	...
Carman	60	...	50	135
Champion	...	550	10	50
Crawford's Early	...	30	320	240
Crawford's Late	...	50	280	400
Early Elberta	260	750	335	40
Early Rose	175	150	140	100
Elberta	...	...	...	170
Golden Jubilee	175	560	...	...
Hale	1775	3005	40	330
Heath Cling	...	210	120	40
Indian Blood Cling	...	...	...	150
Krummel	75	475	250	...
Mayflower	...	400	...	70
Mikado	300	330	490	120
Red Bird	...	...	...	80
Rochester	50	660	400	20
Salvey	...	70	90	200
Shipper's Late Red	20	170	...	...
South Haven	...	135	120	50
Stump	30	125	110	...
Valliant	...	105	70	240
Vedette	350	280	190	...

PLUM—In lots of 10 or more

	2 to 3 ft.	3 to 4 ft.	4 to 6 ft.
	15c	25c	30c
Abundance	...	30	...
Burbank	90	100	88
German Prune	...	20	90
Wickson	40	60	30

WAYNESBORO NURSERIES, INC., Waynesboro, Va.

Oregon-grown ROSEBUSHES

Send
for
List

PETERSON & DERING, Inc.
Wholesale Rose Growers
SCAPOOSE, OREGON

New Rose TEXAS CENTENNIAL

(Red Hoover)
Plant Patent No. 162

Ask for color illustration
and prices.

Also for our general list
of roses.

DIXIE ROSE NURSERY
Tyler, Texas

ESKIMO-HARDY RUGOSA HYBRID ROSES

F. J. Grootendorst, red; for beds and borders. Dr. Eckener, Tallman-like bud and flower. 25 other varieties, including Climbing American Beauty, Paul's Scarlet, Dorothy Perkins, Harrison's Yellow, Buddleia Alternifolia, Orange Quince, etc.

All f.o.b. northern nursery storage.
For quick shipment, write or wire for quotations.

Verhalen Nursery Company
SCOTTSVILLE, TEXAS

Burr's Quality Forcing Roses

Heavy branched, well rooted, excellent quality. Large list of varieties.
\$3.00 per 10, \$25.00 per 100

C. R. BURR & CO., INC.
Dept. A Manchester, Conn.

JEWELL Wholesale

Hardy Minnesota-grown
Nursery Stock and Liners

THE JEWELL NURSERY CO.
POUCH N
Lake City, Minnesota

PRIVET and BERBERIS Splendid Stock

Write for Special Quotations

LESTER C. LOVETT

Milford

Delaware

he puts on the badge right in front of his coat and calls in the evening after supper. He is a man-to-man agent. He says he is not one to be called a petticoat salesman. He calls the customer "brother so-and-so" and the badge does the rest. He inquires about the lodge and all the brothers in the community. Just as he is about to leave he says, By the way, brother, I happen to be in a position to save you some money if you was having any notion to plant any nursery stock. I can get wholesale on almost anything and I was noticing that you should ought to have a few roses and probably some apple trees and a couple of jupiters would sure dress up that space by the side of the garage. In fact I could go to work and make you a plan for your place that would sure dress it up if you know what I mean. Well sir on acct. of they is brothers in the lodge like as not the order is signed up right that evening. Hank has run as high as 2 hunnert dollars on a single job. If and he can get into the lodge meeting sometimes he can sell 3 or 4 orders at one time. He is sure a big help to move the different stuff in the nursery. He says he dont care what it is the customer asks for he can furnish it. We had a lot of stuff in the nursery one time which didnt have any labels on it that was Hanks special pride. We filled a lot of orders out of that patch and some of the names wasnt in any book. I remember the time Hank sold some Ky. Coffee trees which he claimed sure made the best coffee the same as the high-priced kind at the grocery. But as Hank says it didnt make any difference in this case because the old lady was 88 yrs. old and she would be dead anyway before the Ky. Coffee trees had any pods on it. Hank says he didnt have the heart to turn the old lady down when she had her mind set on it so. Hank can sure bring in the orders which is a mighty big help.

TO prevent erosion on hillsides, contour planting of peach orchards is recommended by the United States Department of Agriculture, instead of the traditional right-angled rows. On slopes up to ten per cent, a ridge plowed on the contour gives a satisfactory terracing effect on most soils. On slopes over ten per cent, a larger, well constructed terrace will be necessary every four or five rows of trees. Cover crops help prevent soil erosion.

"J & P"

ROSE NOVELTIES

ANNOUNCEMENT

Jackson & Perkins Patented Roses may now be secured from a group of selected growers throughout the nation. The following firms have been licensed to rewholesale J. & P. Patented Roses:

Adams Nurs., Inc.,	Springfield, Mass.
Armstrong Nurs.,	Ontario, Calif.
Bobbink & Atkins,	Rutherford, N. J.
Brown Bros. Co.,	Roshester, N. Y.
Brown Floral Co.,	Salt Lake City, Utah
Buntings' Nurs.,	Selbyville, Del.
Burr, C. R. & Co.,	Manchester, Conn.
Cole Nursery Co.,	Painesville, Ohio
Conard-Pyle Co.,	West Grove, Penna.
Dixie Rose Nurs. Co.,	Tyler, Texas
Dreer, Henry A., Inc.,	Riverside, N. J.
Economy Nurs. Co.,	Little Silver, N. J.
Germain Seed & Plant Co.,	Los Angeles, Calif.
Henderson's Nurs.,	Alhambra, Texas
Howard Rose Co.,	Hemlock, Calif.
Klyn, Gerard K.,	Mentor, Ohio
Mount Arber Nurs.,	Shenandoah, Ia.
Paramount Nurs.,	West Grove, Penna.
Rosemont Nurs.,	Tyler, Texas
Ruehl-Wholesaler Co.,	San Jose, Calif.
Shenandoah Nurs.,	Shenandoah, Ia.
Smith, W. & T. Co.,	Geneva, N. Y.
Somerset Rose Nurs.,	New Brunswick, N. J.
Storrs & Harrison Co.,	Painesville, Ohio
Vaughan's Nursery,	Western Springs, Ill.
Wilson, C. E. & Co.,	Manchester, Conn.
Winona Nursery Co.,	Winona, Ont., Can.

JACKSON & PERKINS CO.
Newark, New York State

20,000 **ELMS**, American, Vase,
Moline, up to 4 inches,
transplanted.

4,000 **MAPLE**, Norway, up to 2 1/2
inches, transplanted.

2,000 **WILLOW**, Thurlow, 8 to 10
ft. and 10 to 12 ft.

10,000 **SPIRÆA**, Vanhouttei, 3 to
4 ft. and 4 to 5 ft.

Send for list on many other items.

C. M. HOBBS & SONS, Inc.

Bridgeport, Indiana

Largest Nursery in Indiana. Established
1875.

Princeton Nurseries of PRINCETON, N. J.

SUPERIOR Hardy Ornamentals

LINING-OUT STOCK

Connecticut Valley Grown
Seedlings - Rooted Cuttings
Evergreen and Deciduous

Write for List

C. E. WILSON & CO., INC.
Manchester, Connecticut

Ground Covers

Plants Suitable for Places Where It Is Difficult to Maintain Turf or for Reducing Lawn Area

Ground cover plants may replace grass satisfactorily in those parts of the average home grounds that are not used for games or for walking. Because lawn maintenance is an item of considerable expense and trouble, the area of the average lawn is decreasing and a correspondingly larger interest is being shown in ground covers.

In his recent radio garden club talk over the Mutual broadcasting system, Ben Blackburn, landscape specialist of the New Jersey college of agriculture, described a number of ground covers that may be used for lawn replacement.

Bearberries.

The bearberry, *Arctostaphylos Uva-ursi*, grows well on sandy and gravelly soils, and its evergreen leaves and prostrate branches make this shrub desirable for banks and terrace slopes. This sturdy creeper is abundant in the barrens and along the beaches of Maryland, New Jersey, Long Island and the New England states, where it is popularly known as kinnikinnick. The bearberry is abundant also in California and the states to the north. Due to deeply penetrating root systems, wild plants of bearberry can rarely be collected successfully, but these roots enable established plants to survive almost any degree of summer heat and drought. Propagation is from cuttings, but is difficult. If 1-year or 2-year-old plants are set diagonally three or four feet apart, a glossy mat will result after a few seasons' growth.

Junipers.

A number of the prostrate junipers make ideal ground cover for sunny places and for slopes which are difficult to maintain in turf. The best and most prostrate are the creeping juniper, *horizontalis*, and the Waukegan juniper, *Douglasii*. These also are native American plants and they make a cover about eight inches deep. Young plants from pots or balled and burlapped from nursery rows can be planted two feet apart.

Juniperus horizontalis plumosa, the Andorra juniper, grows about a

foot high and is attractive in autumn and winter, when the leaves are tinged with purple and bronze. The Sargent juniper, *Juniperus chinensis Sargentii*, is similar, but it stays green all the year. These two varieties do best in a moderately fertile loam, and they should not be planted closer than four feet in a permanent planting no matter how small the plants are when purchased. Five feet apart is still better. The intervening bare ground may be sown with seeds of Drummond phlox, calliopsis, flame flower or even common portulaca.

Juniperus squamata forms a dense flat mound less than eighteen inches high, spreading five feet or more from the center.

Shore juniper, *J. conferta*, also called *J. littoralis*, grows about one foot high, and it is especially recommended for sandy soil and dune plantings. Two feet apart is a good distance for setting pot plants.

Heathers.

A great many of the named varieties of Scotch heather, or ling, *Calluna vulgaris*, have proved hardy and desirable as far north as Massachusetts. In New England and on Long Island a few extensive plantings have demonstrated the adaptability of these plants, and they have even sown themselves in great profusion. A sandy or gravelly soil slightly acid in reaction and a situation protected from sweeping winter winds seem to give the best results. To maintain a low and pleasing effect, heathers are best sheared back strongly a week or two before growth starts in May, although this annual mowing should not be given too early lest sun scald result.

Peat moss or any humus material worked into the top five inches of soil will encourage small heather plants. A mulch of peat moss is also helpful. Small plants set out at distances varying from one to two feet will produce a mass effect in two or three seasons. After this they may be clipped back nearly to ground level or maintained at a billowing surface from six to ten inches high with fine effect. A lawn mower, set with the cutting bar as high as pos-

sible, will do the ground level shearing.

Cornish heath, *Erica vagans*, and its varieties *rubra* and *alba* are hardy. Spring heath, *Erica carnea*, is exceptional in its willingness to tolerate and thrive in a neutral soil, and it can be grown easily from seeds sown in a peaty soil or cuttings rooted in sand, though it takes three or four years to produce sizable plants. Should shearing be desirable for this winter-blooming species, it should be practical in June.

Roses.

The best forms of the memorial rose, *Rosa Wichuraiana*, make densely tangled mats about a foot high, and the arching green branches create an effect as interesting in winter as in summer. So vigorously does the memorial rose grow that a mass planting is only suited to a generous area. A distance of three or four feet between plants is hardly enough, though advisable for quick results.

The trailing rose, *Lady Duncan*, with its pink flowers, is a *Wichuraiana* hybrid and, together with *Max Graff* and *Mrs. H. M. Walsh*, it is recommended for a 10-inch cover. Three feet apart is a good distance to plant these roses.

Some of the dwarf bush roses may be used as ground covers, but their scarcity seems to make this use unlikely at present. A form of *Rosa Lyonii*, from Colorado, growing no higher than ten inches and spreading freely, and *Rosa foliolosa*, from the south central states, with a similar habit, though more compact and rounded, would be admirable for such use. They thrive in a sweet, fairly heavy soil.

For Sunny Areas.

The common weeping mulberry, *Morus alba pendula*, rooted from cuttings, furnishes a fine ground cover, about one foot high, and is especially good for bank plantings, as some of the creeping branches root and hold the soil effectively. The fruiting plants of these prostrate mulberries attract birds all summer long.

Other good ground covers for sunny places are the creeping burs, *acana*, from New Zealand; a large-leaved form of wintercreeper, *Evonymus radicans coloratus*, and Baltic ivy, *Hedera Helix baltica*. Gold moss, *Sedum acre*, and running stonecrop, *Sedum spurium*, can be cut with a

WANTED

1-year seedlings of
Viburnum Lantana

Quote by air mail, stating
quantity available.

W. B. CLARKE & CO.
San Jose, Calif.

SHERWOOD NURSERY CO.

141 S. E. 65th Ave. Portland, Ore.

Wholesale Growers

Evergreen Trees and Shrubs

Lining-out Stock

Rooted Cuttings

The demand is heavy. Deposit of 25 per cent reserves Lining-out Stock and Rooted Cuttings for delivery next season.

Order now

HANSEN BUSH CHERRY

The newest in early-bearing Cherry fruits. Dwarf growing. Enormous yielding. Extremely hardy and drought-resistant. Large, choice eating fruits. Delicious preserves, jelly, jam, cordial.

Trial, 3 large 2-year, \$1.00, prepaid.
12 large 2-year, \$2.50; 12 small, \$1.50.
All prepaid.

Send for our list of Newest Plant Introductions.

Carl A. Hansen Nursery
Brookings, S. D.

SPECIALS

Evergreen Liners

Baby Phlox Liners

Box Barberry,
18 to 24 ins.

Hardy Shrubs

Wire us for special prices.

SHERMAN NURSERY CO.
Box 519A Charles City, Iowa

STOCK YOU WILL NEED

Cotoneaster Acutifolia, 2 to 3 ft., 25c
Rhus Canadensis, 12 to 18 ins., 15c
Rhus Canadensis, 18 to 24 ins., 25c
Rhus Canadensis, 2 to 3 ft., 35c
Rosa Rubrifolia, 2 to 3 ft., 20c
Rosa (sweetbrier), 2 to 3 ft., 15c
Rhamnus Cathartica, 4 to 5 ft., 25c
Ribes Alpinum, heavy, 18 to 24 ins., 30c
Amor River North Privet, 18 to 24 ins., 6c
Amor River North Privet, 2 to 3 ft., 12c

ESCHRICH'S NURSERY
Sta. F, Milwaukee, Wis.

lawn mower when necessary. Hall's honeysuckle is difficult to keep within bounds, though its fragrance may outweigh this objection. Henry honeysuckle, *Lonicera Henryi*, is easily controlled and it is liked for its dark evergreen leaves. It thrives in a rich moist loam.

For Shady Places.

Yellowroot, *Zanthorhiza apiifolia*, and some of the low blueberries, particularly the lowbush blueberry, *Vaccinium pennsylvanicum*, and the dryland blueberry, *V. vacillans*, can be recommended for sun or partial shade. The autumn colors of the blueberries make them attractive, and they grow about eight inches and one and one-half feet, respectively. Yellowroot grows to four feet, but it may be cut to any desired height and it is easily kept at one foot or eighteen inches by June trimming.

English ivy, *pachysandra*, lily of the valley and common periwinkle, *Vinca minor*, may be used to supplant grass in shaded locations. Bugle, *Ajuga reptans*, furnishes a low cover for lightly shaded areas and, in a moist loam, it will endure for several years, although replanting every four or five seasons—in September—is advisable to maintain a vigorous cover. Native ferns and mosses are also valuable for ground cover in shady spots.

PINE POLLEN HELD LONG.

Discoveries by forest service scientists of the United States Department of Agriculture promise to speed up and extend forest tree breeding activities.

Foresters know now that pine tree pollen kept cool and dry maintains its fertility for several months and can be shipped long distances. This allows tree breeders throughout the world to exchange pollen, fertilize the blooms on their own trees and obtain seeds from the cross which may prove superior to either the domestic or foreign parent. Previously, tree breeders thought pine pollen so delicate that it would live only a few hours.

Another discovery speeds tree breeding by several years. Forest service geneticists found that pine trees under good growth conditions usually produce fertile flowers at two to five years of age. By cross-pollenizing, seeds are obtained from immature parent stock.

**HARDY WESTERN
EVERGREEN SHRUBS**

For late spring planting.

Garden-grown native plants with fine fibrous roots and wonderfully attractive foliage, fit for planting till June or later. They make excellent ground cover, mass planting or border; thrive in sun or shade on ordinary soil; are fine beneath trees, over rocks and barren slopes.

500 **Creeping Kinnikinnick** (Bearberry), with 8 to 12-in. runners \$30.00 per 100
500 **Oregon Grape** (*Mahonia Aquifolium*), with bushy 12 to 15-in. tops \$45.00 per 100
300 **Mountain Boxwood** (*Pachistima Myrsinites*), deep green foliage summer and winter; immune to scale or pests; 2 to 3 feet tall; a fine new plant for slope or border; with dense 14-in. tops, ... \$40.00 per 100

Trade prices f.o.b. Spokane. Puddled and packed in moss for safe delivery anywhere in U.S. Four days to New York.

Responsible eastern contacts desired for these and other fine native shrubs. Samples to interested parties.

C. E. ARTMAN, NATIVE GARDENS
Box 270 Spokane, Wash.

**A. MCGILL & SON
FAIRVIEW, OREGON**

Wholesale Only

Our usual line of quality nursery stock, including Shade and Flowering Ornamental Trees and Specialties, Fruit Tree Seedlings and Roses.

Crown Right and Packed Right

*A card will bring our list of items
that will make you some money.*

MILTON NURSERY CO.

Milton, Oregon

Growers General Nursery Stock

Car lot accommodations
for eastern points.

YOUR WANT LIST APPRECIATED

PACIFIC COAST NURSERY

1436 N. E. Second Ave. PORTLAND, ORE.

*Largest Fruit Tree Seedling Growers
In America.*

We accept growing contracts for 3 to 5 years.
Quality stock. References on request.

John Holmason, Prop.

DAPHNE CNEORUM

9 to 12 ins.	10	100
12 to 15 ins.	\$ 5.50	\$ 45.00
15 to 18 ins.	7.50	65.00
18 to 24 ins.	9.50	85.00
	12.00	100.00

Boxing at cost.

EDEN NURSERIES

Eden, New York

U. S. Route 62, 18 miles south of Buffalo

SUGAR MAPLES FOR SALE

We offer a fine block of Sugar Maples 6 to 8 feet—8 to 10 feet—1¼ to 1½-inch located in Painesville area. We have them priced to move this spring.

PFUND, BELL NURSERY CO.
ELMHURST, ILL.

Reviews of New Books

"GARDENER'S SECOND YEAR."

As the second book in a series of three written to assist inexperienced amateurs, "The Gardener's Second Year," by Alfred Bates, contributing editor of the National Horticultural Magazine, confines its discussion to perennials and bulbs. The first book, reviewed a year ago, dealt with annuals. The third book is to conclude the series with shrubs and trees.

There are 278 pages in this book. Of this number, 136 pages are devoted to general and specific information concerning the preparation and care of the perennial garden. The material is not new; the value lies in the fact that it contains the answers to the questions that most frequently perplex the new gardener. The remaining pages are divided into a 127-page descriptive list of perennial flowers, a 6-page table of planting distances and a 9-page index, all of which are carefully arranged to give the greatest possible assistance to the beginner.

In presenting this book, Longmans, Green & Co. fill the need often felt by those individuals who lack the background of previous garden experience and who need primary instruction in general garden practice. To them, this book should be well worth the publisher's price of \$2.

FOR CITY GARDENERS.

D. Appleton-Century Co. publishes "Your City Garden," which has been written by Margaret McKenny and E. L. D. Seymour to assist city dwellers to enjoy the beauty of living plants in their home grounds.

Margaret McKenny is executive secretary of the City Gardens Club of New York. Her training and experience are varied and comprehensive.

E. L. D. Seymour has been connected with horticulture and gardening for more than twenty-five years and is at present the horticultural editor of American Home and Country Life.

The two authors have pooled their experiences for the benefit of city gardeners in this 215-page book. Thirty-one pages of excellent illustrations show results obtained in gardens in various cities.

There is practical advice on inclosing the back-yard garden, on the best kind of fences, on designing and furnishing the outdoor living room, on the most suitable and beautiful plant materials and on soil preparation, planting, construction details and upkeep. There is also valuable information on the designing, construction and plant materials for roof gardens, penthouse and terrace gardens, window and balcony boxes, indoor gardens and conservatories. The book is bound in tan cloth and sells for \$2.50.

FRAGRANCE IN THE GARDEN.

The pleasures of the intimate fragrant garden and the flowers especially suited for such planting are the topics of a little book, "Fragrance in the Garden," written in an informal style by Anne Dorrance and published recently by Doubleday, Doran & Co. Many of the subjects, though certainly

not all which qualify for the author's attention, are old friends to most gardeners, but the comments on them include a vast number of interesting points that make the material exceedingly readable. Science, plant lore and philosophy are combined.

With the aid of this book the gardener can plan for fragrance in the garden the year round. Lists of fragrant plants are given for early, midseason and late blooming. In such large groups as irises and peonies, selected named varieties appear. There is also an alphabetical list, starting with *Achillea filipendula* and ending with yarrow. Separate chapters are given to fragrant plants for the rock garden and to sweet herbs and aromatics. The final chapter is on perfumes and their preparation.

Trees, shrubs and fragrant vines are not overlooked. There are suggestions, too, which will help the gardener to avoid poor combinations of scent and color, while the wealth of material named should permit selections suited to a variety of tastes. Ten line drawings illustrate the text of ninety-six pages. The pocket-size book is cloth-bound and sells for \$1 per copy.

KEW GARDENS GUIDE.

Those who have personally inspected the gardens, as well as those who have the event yet in store, will undoubtedly enjoy the perusal of an illustrated guide to the Royal Botanic Gardens at Kew, London, England, which can now be obtained on remittance of 35 cents to the British Library of Information, 270 Madison Avenue, New York. The text includes a history of the development of the gardens and brief descriptions of all the principal features in the gardens, both structures and plantings. There is a splendid collection of full-page halftones, which give some idea of the

beauty of the gardens; other illustrations depict unusual plant specimens grown there. Those contemplating a journey to England should also welcome the schedule of features of interest to be found in each month of the year. A key plan to the plantings is included.

The Royal Botanic Gardens are almost invariably included in the itinerary of those who have horticultural interests and find opportunity to visit England. These gardens are considered the center of botanic science in the British empire and have attained world-wide eminence under the supervision of noted horticulturists. Developed privately from the latter half of the seventeenth century until 1840, the property was given to the nation at that time by Queen Victoria and its control since 1903 has been vested in the Ministry of Agriculture and Fisheries.

BULLETINS RECEIVED.

The spraying calendar, bulletin 154, of the extension division of Michigan State College, was revised March, 1937, by E. J. Rasmussen, Ray Hutson and Donald Cation. In its forty-eight pages recommendations and advice are given concerning the choice of materials, the preparation and application of sprays and dusts, the avoidance of excessive residues, the control of specific diseases and insects, the use of controls supplementary to sprays and dusts, and the care of berries and fruits for which spray schedules are given.

"Requirements and Directions for Plant Pest Control," a bulletin issued by the department of agriculture and immigration of the state of Virginia, sets out in detail the requirements that have already been adopted by the central plant board of thirteen central states and gives the requirements added by the Virginia department of agriculture. The entire list of forty-nine sections has been adopted to prevent movement of infested or diseased plants and to govern the granting of official inspection and registration certificates under the Virginia crop pest law.

ROADSIDES

THE FRONT YARD OF THE NATION

By J. M. Bennett

Superintendent of Parks and Forestry
Board of County Road Commissioners, Wayne County, Mich.

Beautification of highways by the planting of trees, shrubs, vines and flowering plants has been immensely stimulated by government appropriations for relief projects in recent years. Such work deserves the support of everyone interested in horticulture for its own merit and for the interest it engenders in the motoring public in such plant materials for private landscape use. Here is a book explaining what is being done and how. You should keep posted yourself and be ready to help your community in such projects.

\$3.00 per copy

AMERICAN NURSERYMAN

508 S. Dearborn St.,

CHICAGO, ILL.

FREDONIA-GROWN

Grapevines, Currants, Gooseberries,
Blackberries and Raspberries

A complete stock in all standard varieties including the new

**FREDONIA, ONTARIO and
PORTLAND GRAPES.**

5000 Extra fine 1-year No. 1 Delaware
5000 Extra fine 1-year No. 1 Catawba

Send your want list for quotations.

Foster Nursery Company, Inc.

69 Orchard St. Fredonia, N. Y.

Evergreens, Broad-leaved Evergreens,
Deciduous and Ornamental Trees,
Flowering Shrubs, Barberry, Privet,
Hardy Perennials and Rock Plants - -
Fruit Trees and Small Fruits - -
Lining-out Stock.

PEACH TREES

A fine general assortment.

Write for quotations and our Wholesale Trade
List and also our Special Surplus Bulletin.

The WESTMINSTER NURSERY

Established 1893 Westminster, Maryland

PEACH PITS

OUR PITS COMPARE FAVORABLY
WITH THE BEST

HOGANSVILLE NURSERIES

Hogansville, Georgia

STRAWBERRY PLANTS

No better plants grown than Hill's high-grade, true-to-name, well graded, new and standard varieties. A trial order is convincing. Let us quote you on your requirements.

HILL'S PLANT FARMS

Box C Selbyville, Delaware

RASPBERRY PLANTS

Cumberland, Latham, New Logan

GRAPES

Delaware, Concord, Niagara

Get our prices before you buy

HILLTOP ORCHARDS & NURSERIES

Hartford, Mich.

LATHAM RASPBERRIES

CHINESE ELM Hardy Strain

Northern Apple Seedlings

ANDREWS NURSERY

FARIBAULT, MINN.

Small Fruit Plants

Evergreens — Shrubs

Lining-out Stock

Send for Complete Trade List

SCARFF'S NURSERIES

New Carlisle, O.

RADIO GARDEN PROGRAMS.

Announcement is made that the coast-to-coast network of the Mutual Broadcasting System now carries the programs of the Radio Garden Club, a broadcast originating at station WOR on gardening for the amateur, delivered for fifteen minutes every Tuesday and Friday at 3:15 p. m., eastern standard time. The Radio Garden Club's programs are broadcast by the agricultural extension service of Rutgers University, New Brunswick, N. J., with the cooperation, as cosponsors, of the Brooklyn Botanic Garden, Garden Club of New Jersey, Federation of Garden Clubs of Bergen County, N. J.; Federated Garden Clubs of New York State, Inc., and the New York Botanical Garden.

While designed for amateurs, some of these programs are delivered by prominent trade figures, whose remarks are of interest to commercial and amateur horticulturists alike. Certainly members of the trade can recommend these lectures to their customers, if they do not have opportunity to listen themselves.

For instance, the broadcast April 27 on ornamental gourds is by Helen M. Tillinghast, gourd specialist, Vernon, Conn.; April 20 by Harriette A. Hallows, iris specialist, Plainfield, N. J.; May 4, on window box gardens, by Prof. Richard B. Farnham; May 7, on rhododendrons, by Peter M. Koster, of the Bagatelle Nursery, Huntington, N. Y., and May 11, on "Oriental Beauties," by Charles Doney, of the Brooklyn Botanic Garden.

ROSE REGISTRATION.

The American Rose Society's registration committee has approved applications for registration of the following roses. Notice of these registrations has been sent to rose organizations in foreign countries and trade papers. If no objections are raised before May 27, 1937, the registration of these names will become permanent as of that date.

Lovely Lady. Hybrid tea. Originated by E. R. Asmus, Sr., Closter, N. J. Said to be a sport of Better Times, of the type of Premier Supreme. Color is pure rose-red. The large, full flowers have a delicious fragrance. Plant is described as a normal hybrid tea, growing five feet high under glass and producing an average of twenty-six salable flowers per season. It is said to have practically no thorns.

Peach Blow. Hybrid tea. Originated by L. B. Codrington, Murray Hill, N. J. Said to be a seedling of Mme. Butterfly and an unnamed yellow seedling. The flower is of the Rapture type, with a pink color similar to that of Rapture. It has an average of twenty-six petals. Spicy fragrance. The plant is described as compact, with a healthy foliage which neither black spots nor mildews.

Sweet Memory. Hybrid tea. Originated by Forrest L. Hieatt, San Diego, Cal. Said to be a cross of Mrs. C. W. Edwards and Rose Marie. Flower is described as somewhat like Betty Upchurch in form. The color is spinel-pink, with a yellow base and a pomegranate back to the petals. The semidouble flowers average twenty petals. Plants are thorny, disease-resistant and grow five feet in California. It is claimed to be an abundant continuous bloomer throughout the season.

Golden Wedding. Hybrid tea. Originated by Alfred Krebs, Montebello, Cal. Said to be a cross of Souv. de H. A. Verschuren and an unnamed yellow seedling. Both flower and plant are said to resemble Verschuren. The flowers are clear yellow, with no variation in the coloring. They are five inches in diameter and are fully double. Moderate fragrance.

R. Marion Hutton, Sec'y.

A BRANCH of the Bay State Nurseries, Framingham, Mass., has been established at Arlington, on Massachusetts avenue.

RAYMOND BUSKIRK, a former landscape architect at Clay Center, Kan., has leased a farm at the south edge of the town for a nursery.

GRAFTED HYBRID RHODODENDRONS

Exceptionally fine stock for immediate delivery. Send for list, which completely describes and prices the wide variety we offer.

MAGNOLIAS

A remarkable collection of twenty varieties, in all colors and sizes. Splendid specimen stock for landscape plantings.

PIERIS JAPONICA

(Japanese Andromeda)

Our stock of this worth-while, broad-leaved evergreen is fine. Use more of it.

BOBBINK & ATKINS

Rutherford, N. J.

Our wholesale list will be sent on your request. We will gladly quote on special requirements.

BROAD-LEAVED EVERGREENS

From the Highlands of the Carolinas

Gardens of the Blue Ridge are Headquarters for Hardy Native American Plants. Our supply in both nursery-grown and collected woods-grown is sufficient to supply the demand.

Azaleas, Leucotheas, Kalmias, Rhododendrons, Andromedas, Orchids, Vines, Climbers, Creepers, Ferns, Liliaceae, Trilliums, Gloxinias, and hundreds of others of tried and tested merit are grown and carried in large supply. Our 45 years' practical experience, quality, quantity, variety, low price and unequalled organization are at your command. Complete catalogue and Surplus list will be sent on request.

E. C. ROBBINS

Gardens of the Blue Ridge
Ashford, North Carolina

Collected and Nursery-grown
Native Azaleas and Rhododendrons
Collected Rhododendron and Evergreen
Seedlings for setting out
Send for list.

DOE VALLEY FARMS, Inc.

Northern Office—Harrison, N. Y.

LINING-OUT STOCK

First-class in every respect. Per 100
Barberry, Japanese, green, 1-year, 6 to 9 ins. \$1.25
Boston Ivy, fine seedlings..... 2.50
Coralberry, 9 to 12 ins..... 1.50
Honeysuckle Bush, Tatarian pink..... 3.00
Honeysuckle Vine, Hall's Japan, fine..... 2.00
Hydrangea A. G., fine divisions..... 3.00
Malvaceae, 2-year, from select reds..... 2.00
Spiraea Calicea Rosea, 12 to 15 ins..... 2.00
Spiraea Vanhouttei, 12 to 15 ins..... 2.00

HARMON NURSERY, Prospect, Ohio

LARGE FIELD-GROWN PLANTS

Phlox Decussata: Painted Lady, Enchantress, Thor, Prime Minister, Mrs. Jenkins.

\$8.00 per 100, \$70.00 per 1000

Send for complete list

PITZONKA'S PANSY FARM, Bristol, Pa.

PEONIES

All types, including Tree Peonies

The Cottage Gardens
Lansing, Mich.

STATION WORKERS CONFER.

Reports Yield Trade Hints.

While a conference of experiment station workers may not appear to have any connection with commercial growers, some of the reports presented at a recent conference of workers from the various stations in Minnesota, held at St. Paul recently, contained some worth-while suggestions for nurserymen.

One seedling apple, unnamed as yet, which has proved absolutely hardy in the northern part of Minnesota as far as the writer is aware, and is as yet unknown to the trade, was described. For northern Minnesota this apple was highly recommended by Mark J. Thompson, superintendent of the northeast experiment station, near Duluth. In that part of Minnesota, Mr. Thompson, reporting on ornamentals, said Scotch pine had proved to be dependable, while experiments had shown that early spring is the best season for moving evergreens in that section. Arbor-vitæ is going out of favor. White spruce is proving dependable and well suited to that region.

Tests of Evergreens.

At the west central school and experiment station, Morris, Minn., experiments have been carried on in many phases of horticulture. Of a number of evergreens planted—Colorado spruce, Black Hills spruce, Mugho pine, red cedar and ponderosa pine—all survived the hard summers and winters experienced since 1929, when the trees were set out. Ponderosa pine grows slowly, but is excellent. Morris is on the edge of the great American desert region. This necessitates the use of plant material highly resistant to drought. Chinese elms have proved resistant to heat and drought, and but for a few exceptions, quite hardy.

Green ash, American elm, honey locust, basswood and Chinese elm have stood the drought in any location, whether lawn, boulevard or windbreak. This should be of interest to all nurserymen, for the western part of Minnesota is a good trial ground for any plant material.

For the north central experiment station, Grand Rapids, Minn., the superintendent reported the setting out of thousands of trees. He stated, however, that rabbits not only girdled the trees but ate the needles of evergreens in spite of trapping, shooting and placing guards around the trees.

Good Shrubs.

At the central station, St. Paul, among the lower-growing shrubs, *Cotoneaster integerrima* and *Aronia arbutifolia* were found outstanding for their bright red fruits; they should be grown more than they are. These shrubs are as easy to propagate as they are to grow. Several nurserymen report having received complaints from customers after the latter used peat in preparing for seeding lawns. At the central station it was found that there has been some cause for complaints, but if the peat is thoroughly wet first, the addition of peat to lawns is helpful and assists grass seeds to take hold much more quickly.

At the Grand Rapids station, plantings of red currants have been made, and the plants have proved free from

white-pine blister rust; inoculations of this disease showed negative results.

At the request of those attending, the conference will be repeated next year; consequently, reports of trials will be worth watching and should be of interest to all growers, as it is the intention to keep records of all types of plant material and exchange reports with the different experiment stations.

COLLEGE ASSISTS TRADE.

Experimental work with trees, small fruits and nursery stock at the Oklahoma experiment station farm located at Perkins was explained to the experimental advisory committee of the Oklahoma Nurserymen's Association which met on the campus of the Oklahoma A. & M. College, Stillwater, April 16. Prof. Frank B. Cross, acting head of the department of horticulture, explained the work and also pointed out the plots devoted to truck problems.

Those present were: Leo Conard, Stigler; Secretary J. A. Maddox, deputy nursery inspector, Oklahoma City; W. E. Kenyon, Oklahoma City, and J. M. Robertson, state nursery inspector, Oklahoma City. Two members were unable to attend.

The visitors enjoyed a turkey dinner with Dr. L. S. Ellis, acting director of the experiment station; Dr. F. A. Fenton, head of the department of entomology; Dr. R. F. Rolfs, head of the department of botany; extension horticulturists, and the staff members of the department of horticulture.

A general discussion of the nurserymen's problems was held after the dinner. Suggesting work which the experiment station can do to assist the nurserymen is the purpose of the advisory committee. Favorable consideration will undoubtedly be given to a request for a nurserymen's short course, to be held at a time favorable to the nurserymen.

Flat-headed borer injury and possible controls were discussed by Dr. Fenton. Dr. Rolfs talked on rose and apple diseases. The group then visited the greenhouse. The floricultural students of the department of horticulture arranged the decorations for the dinner, and the college and experiment station greenhouses furnished the flowers and boutonnieres.

BOBBINK & ATKINS IN WEST.

The inclusion of Libertyville, Ill., with Rutherford, N. J., in the address of Bobbink & Atkins on the display card in the firm's azalea exhibit at the national flower show was the trade's first information about the eastern firm's lease of the property formerly operated

AMERICAN NURSERYMAN

by Joseph Kohout and later Kohout Flower Growers, Inc., near Libertyville. It includes about fourteen acres of land, 75,000 square feet of glass and a brick office building, with living quarters on the second floor. The property was leased from the City National Bank & Trust Co., of Chicago and Ernest Buehler, Chicago, trustees.

There Bobbink & Atkins expect to concentrate on the production of hydrangeas and azaleas for sale in dormant condition to greenhouse operators throughout the country. The greenhouses have been unoccupied since foreclosure a couple of years ago, but Bobbink & Atkins are expected to begin operations soon. The purpose is to supply stock for the western greenhouse customers of the firm, as the close approach of the Japanese beetle is a constant threat at Rutherford.

WINS FAIR CONTRACT.

Outpost Nurseries, Inc., Ridgefield, Conn., has been awarded the first contract for supplying and planting full-grown trees on the New York world's fair site at Flushing, N. Y.

The award was made April 1, and on Friday morning, April 2, three 10-ton trucks arrived at Flushing, each one carrying an oriental plane tree weighing approximately ten tons. The trees were thirty to thirty-five feet high, with a ball twelve feet in diameter and three feet deep. The trees were shipped from Bird in Hand, Pa., 156 miles from the Holland tunnel, making it necessary to route them over the George Washington bridge. They were then met by a motorcycle police escort, which routed them through the city and out to the fairgrounds, where they were set with much ceremony, being the first trees on these 900 acres of what was, a few months ago, a barren waste.

These are the first of approximately 10,000 trees that, within the next two

PERFECTION MARKERS

will designate your stock with elegance, assurance and economy.

Made of galvanized steel, finished green baked enamel. Card fully protected yet always in full view.

In display grounds and in the fields, from Transvaal, South Africa, to the island of Guam.

they enjoy a record of "PERFECT SATISFACTION" (not one complaint) to thousands of users. EXCEPTIONAL SERVICE at very moderate cost. For descriptive folder and prices, write

The S-W Supply Co. Girard Kansas

FLAME-GUN DESTROYS WEEDS
Does Work of 4 Men

Hauck Kerosene Flame-Gun—2000°F. controlled heat—quickly... easily... economically destroys weeds (seeds and all), brush, other objectionable growths. Keeps roadways, fences, irrigation ditches, orchards, etc., clean. Hundred and one uses. Inexpensive—Safe—Easy to use. Pays for itself in time and money saved. 10 day Free Trial. Write for Free literature and special introductory price.



HAUCK MFG. CO.
138 TENTH STREET
BROOKLYN, N.Y.

FREE VALUABLE FOLDER—WRITE TODAY!

The Most Effective Agent Known
Kill Weeds with Fire!
Aeroil 99 Torch, Weed Burning Disinfecting 99 Uses

Aeroil BURNER CO.

W. New York, N.Y.
2021 S. Mich. Av.
Chicago - 400 Dry-
ant, San Francisco
3406 Main, Dallas

Free NEW 48-PAGE BOOKLET tells how to save time, labor and money by using the AEROIL NO. 99 BURNER. Kills weeds and insect pests and has 99 other uses for Nurserymen. Send for BOOKLET 99A.

10 DAYS FREE TRIAL - TRY IT AT OUR EXPENSE

years, will be used to develop this great landscape project. Different varieties of trees will be used, including American elms, red maples, pin oaks, flowering dogwoods, etc., many of them weighing up to twenty tons. A great number will be collected on farms and in fields of Connecticut and New York, as they are of much larger sizes than are normally handled by any nursery. Some will be shipped from Chicago.

Outpost Nurseries, Inc., has a staff of experts on the fairgrounds, which is attending to the planting. This work offers an unusual problem, since the base of the entire site over the Flushing meadows has been a municipal ash dump for the past forty years, making the changing of all soil necessary for the trees to develop and be in prime condition for the opening of the fair in April, 1939.

CATALOGUES RECEIVED.

[In writing for a copy of any of the catalogues reviewed below, please mention that you saw it described in *The American Nurseryman*.]

Native Gardens of Eastern Washington. Spokane, Wash.—A folded sheet with six columns describing and illustrating mountain myrtle, Oregon grape, kinnikinnick (bearberry), ocean spray and rose spiraea. Retail prices are quoted on accompanying order form.

Rhuanaga Nursery. Cape Elizabeth, Me.—An 8-page price list offering rock and alpine plants.

Henry Kohankie & Son. Palmetto, Fla.—A 190-page price list, bound as a pocket-size booklet, offering trees, shrubs, evergreens, vines, roses, herbaceous perennials (including alpine plants), fruit garden material and large specimen material. Six lists of plants for special purposes are included.

Shenandoah Nurseries. Shenandoah, Ia.—Bulletin No. 3, a wholesale fruit and ornamental list of fifty-six pages, with index and grade counts.

Mount Arbor Nurseries. Shenandoah, Ia.—Wholesale bulletin No. 3, a fruit and ornamental list of sixty-four pages, with index and grade counts.

Green River Home Nursery. Robards, Ky.—Retail catalogue of forty-four pages, illustrated and indexed, offers shade and ornamental deciduous trees, evergreens, shrubs, roses, perennials, vines, fruit trees and small fruits.

Gladiacac Gardens. Sharon, Mass.—A 6-column retail folder featuring rock garden and border plants, bulbs and tubers.

Price Hill Dahlia Gardens. Cincinnati, O.—A 4-page, letter-size, retail catalogue of dahlia tubers and plants, together with a short list of gladioli and another of hardy plants.

McHutchison & Co. New York, N. Y.—Three sheets listing Dutch, bulbs, hyacinth, tulip, crocus and other bulbs for fall importation. Prices to be quoted f.o.b. cars, New York. Another sheet offers burial squares, tonkin canes, etc.

Cronamer Alpine Nurseries. Greens Farms, Conn.—An illustrated catalogue of eighty pages, offering rock and alpine plants at retail prices.

Charles Malmo Nursery. Seattle, Wash.—Retail catalogue of fifty pages lists fruit, nut, ornamental and evergreen trees and shrubs; roses, vines, perennials; flower, vegetable, grass and grain seeds; bulbs, spray materials and pumps and supplies.

Paul J. Howard's Horticultural Establishment. Los Angeles, Cal.—"World Treasures from Flowerland" has a map on the covers with the Howard firm the center to which plant material from all over the earth is brought. Flower seed novelties, annual flower seeds, including asters; sweet peas, perennial flower seeds, a new double Shasta daisy, snowdrift; perennial plants, garden carnations, annual plants, geraniums, fuchsias, gerberas, tree peonies, camellias, roses, dahlias and chrysanthemums fill the first fifty-one pages of the 84-page catalogue. Then follow decorative plants, citrus and subtropical fruits, vines, evergreen shrubs, spring-flowering shrubs, shade trees, evergreen trees, vegetable specialties and bulbous and tuberous plants. There is an index, where is listed a great variety of unusual and the more ordinary stock.

A NEW incorporation at Orlando, Fla., is Dawkins Nursery, Inc., with fifty shares at \$100 par value. W. F. Dawkins, Richard Rothfuss and H. L. Dawkins are directors.

WHILE thousands of dollars' worth of shrubs were saved, 300 valuable specimens were destroyed in a fire at the old Elizabeth Nursery Co. establishment near Union, N. J., last week.

BOOKS

ON NURSERY PRACTICES

THE COMPLETE GARDEN, by A. D. Taylor. The most comprehensive guide to materials, telling what, when and where to plant for any desired effect. Prepared by a widely known landscape architect. Contains 440 pages, with sixty-three pages of illustrations from photographs, line drawings and diagrams. Cross-referenced lists, a detailed index, a large bibliography and a glossary of terms are other important features. Useful for practically all parts of the country...\$1.79

GARDEN FLOWERS IN COLOR, by G. A. Stevens. 400 flowers pictured in full color. A most unusual garden book which assembles for the first time in one volume accurately colored pictures of every important garden plant, in some cases covering several varieties of the same flower. The accompanying text tells briefly what each plant is and effort is made also to give brief cultural directions. 320 pages.....\$1.95

PRACTICAL LANDSCAPE GARDENING, by R. B. Criddle. Contains 81 photographic illustrations, 67 sketches and 33 plans, 19 of which are planting plans, accompanied by planting keys. Best book in its class.....\$2.50

STANDARD CYCLOPEDIA OF HORTICULTURE, by L. H. Bailey. Three large volumes. This release of the Cyclopaedia, in three volumes, is offered at much less than the former price. It is printed on thin paper of fine quality, from the same plates as the 6-volume edition, and includes all the wealth of material contained in the original Cyclopaedia. This work ranks as the most comprehensive and authoritative treatment of the subject of horticulture in America; the most useful work ever published for florists, nurserymen and seedmen. Special offer, cash with order, set of 3 vols. Carriage collect....\$15.00

ROCK GARDEN AND ALPINE PLANTS, by Henry Correvon, the world's foremost living alpine plant grower. Tells how to grow and acclimatize these plants, how to build, plant and maintain rockeries, moraines and wall gardens. Contains a list of 542 plants, the place for each, how to grow it, time of flowering, height, color of flower, and all other information needed to select the kinds best suited to various localities. 560 pages, 53 illustrations....\$3.00

THE CULTIVATED CONIFERS, by L. H. Bailey. This book succeeds "The Cultivated Evergreens," now out of print. A companion book, to be published later, will treat other than coniferous evergreens. The first half of the volume is devoted to a systematic treatment of coniferous evergreens under five general groups. About 1,000 species and varieties are recorded. The last half concerns the growing of conifers for ornament and interest, covering conifers in the landscape, cultivation and propagation, insects and diseases, and the injuries of conifers in North America. 404 pages. Illustrated.....\$7.50

THE MODERN NURSERY, by Alex Laurie and L. C. Chadwick. A guide to plant propagation, culture and handling. Provides complete reference for everyone concerned with the propagation of plants giving full descriptions of all methods and many tables which indicate plant treatment. Discusses fully and completely tools, tillage, planting, transplanting, digging, grading, labeling, pest control, soils, fertilizers, storage, advertising, selling and every other phase of nursery management.....\$5.00

AN INTRODUCTION TO THE STUDY OF LANDSCAPE DESIGN, by Henry V. Hubbard and Theodora Kimball. Chapter titles include Theory, Taste, Ideals, Style and Character in Landscape Design, Composition, Planting Design, Design of Structures in Relation to Landscape and Notes on the Professional Practice of Landscape Architecture in America. A selected list of references on landscape architecture is also valuable. 516 pages, 37 full-page half-tones from photographs and 40 drawings.....\$6.00

THE AMERICAN NURSERYMAN
508 S. Dearborn St., Chicago, Ill.

Enclosed is remittance for \$.....for which please send me books marked.

NAME

ADDRESS

HERE ARE
LISTED SOME
OF THE
BOOKS FOUND
MOST USEFUL
BY
NURSERYMEN



Others on many subjects may be obtained at publishers' list prices through *The American Nurseryman*.

PLANT PATENTS.

The following plant patents were issued recently, according to Rummier, Rummier & Woodworth, patent lawyers of Chicago:

No. 243. Rose. J. A. Armstrong, Ontario, Cal., assignor to Armstrong Nurseries, Ontario. A new variety of rose plant characterized particularly by its vigorous climbing habit, its usual production of larger flowers as compared with those of the bush, Golden Dawn, and its habit of producing most of its bloom in the spring and blooming intermittently throughout the remainder of the season rather than continuously, as does the bush, Golden Dawn.

No. 244. Rose. J. A. Armstrong, Ontario, Cal., assignor to Armstrong Nurseries, Ontario. A new variety of rose plant, characterized particularly by its vigorous climbing habit and its habit of producing most of its bloom in the spring and blooming intermittently throughout the remainder thereafter rather than continuously, as is done by the bush, Hinrich Gaede.

No. 245. Rose. Warwick G. Bate, Newton Falls, O. A rose plant characterized by flowers of large size composed of petals colored mainly by yellow and pink pigments, the inner tips of the petals being yellow and the yellow gradually fading from the inner tip to the central portion of the petal, the pink showing almost entirely on the outer face of the petal and being dispersed throughout nearly the entire outer face of the petal in the bud, the color of the inner half of the outer face being modified by the yellow, the pink pigment gradually flowing outwardly away from the yellow during the opening and aging of the flower.

No. 246. Rose. F. C. Raffel, Stockton, Cal. A climbing hybrid tea rose characterized by its fullness of bloom and persistence of color as compared with the Climbing Golden Emblem variety.

No. 247. Berry. Hallack F. Greider, Vashon, Wash. A berry characterized by its hardiness and prolific fruiting.

WRITE AGREEMENTS.

In most if not all of the states there is a statute which makes unenforceable an agreement not to be performed within in one year, unless it is in writing. Applying the Alabama statute, the Supreme court of that state lately ruled that a verbal agreement by the seller of a business that for a period of two years he would not compete with his successor was invalid. (Collas vs. Brown, 100 Southern Reporter, 769).

In the same case it was decided that a written contract for the sale of the business, including good will, does not permit proof of a verbal agreement of the kind aforementioned. That decision applies the rule that where a written contract was evidently intended to cover the full agreement of the parties, evidence of a verbal agreement made contemporaneously with, or before the written contract, is inadmissible if the evidence tends to enlarge or contradict the writing.

CLASSIFIED ADVERTISING

Aucuba Japonica, established 2½-in. pots, variegated or green, 8c.
Goldsboro Nursery, Goldsboro, N. C.

Hemlock, 8 to 12 ft. high. Honey Locust and Oak. Trilliums, Maidenhair Fern and On-
trich Fern. Elmgrove Nursery, Leetsville, Mich.

Laurocerasus Caroliniana (Cherry Laurel). 2-year liners, \$2.00 per 100, \$15.00 per 1000. Cash, please. **Sam Stokes & Son, Lecompte, La.**

Hardy Chrysanthemum Pink Cushion. Fine rooted cuttings, \$2.00 per 100. (Same as Amelia and Azaleum.)
Wonderland Nurseries, Ellersom, Va.

My new Seed List has been posted to customers. Copies are still available for those interested.

Manager, Lissadell, Sligo, Irish Free State.

Roses, Own-Root, 2½-in. Pot-Grown.
Radiance \$1.00 per 100
Red Radiance 7.00 per 100
Briarcliff 6.00 per 100
Talisman 7.00 per 100
Kaiserin Augusta Victoria 8.00 per 100
Send for list of more than 100 varieties of own-root potted Roses. Special prices quoted by the thousand.

Jos. W. Vestal & Son, Little Rock, Ark.

EXEMPTS NURSERY CONTRACTS.

The authors of the Walsh-Healy act have introduced into Congress a bill which will extend the original act to contracts amounting to \$2,500 or more, the original enactment having applied only to contracts amounting to \$10,000 or above. The new bill will specifically exempt nursery stock from the provisions of the act. The original law carried a vague exemption, which created question as to whether all nursery stock was entirely exempt or only stock of a strictly perishable nature.

THE White Plains Nurseries, Hartsdale, N. Y., have been incorporated.

H. M. EDDIE & SON, Sardin, B. C., have leased a 10-acre tract near Avon, Wash., for growing rosebushes.

THE Warren Landscape Engineering Co., Providence, R. I., was the lowest of eight companies submitting bids for landscaping about 20,247 square yards of land at the new overpass at the Kingston, R. I., railroad station.

UPON the request of the Southern California Nurserymen's Association, citrus growers and nurserymen may now have state inspection of parent trees from which budwood is selected to determine the presence of scaly bark.

LLOYD MOFFET, Fremont, Neb., nurseryman, announces that his firm has won a government contract to grow forty-two acres of hardwood trees this year. Mr. Moffet says the project will employ fifty men now and perhaps 100 later.

THE monthly leaflet circulated by the North Jersey Metropolitan Nurserymen's Association among customers and prospects has been named Garden Craft. The winning title was submitted by John Schaefer, Mountain View, N. J., to whom the association will give as prize \$25 worth of nursery stock.

COLORADO will have a law permitting liens to be filed against property for non-payment of debts contracted on nursery stock, if the bill now in the state legislature continues on its way. It passed the second reading recently. It was introduced by Homer Pearson, Wheat Ridge, who is a carnation grower as well as state representative.

THE Central California Nurserymen's Association, at the meeting held in Hayward April 8, devoted itself to the report of the legislative committee on the program that has been under consideration at the present session of the legislature. New members of the association are Edward Markham and Mr. Stalker, of the Leonard Coates Nursery, San Jose, and Oliver Kehrlein, manager of the California spring garden show, Oakland.

DEDICATION of a California redwood tree planted as a memorial to the late George C. Roeding in the recently created Washington park at Niles, Cal., drew a number of nurserymen to that place April 10. The dedicatory inscription appears on a bronze plaque embedded in a large boulder taken from the grounds of the California Nursery Co. and placed at the base of the tree. The speaker of the day was Henry W. Kruckeberg, Los Angeles, veteran secretary of the California Association of Nurserymen, who gave an account of the early history of the California industry and of George C. Roeding's achievements.

"Worth Many Times the Price of the Magazine!"

That's what several subscribers have said about the 6-page table on **Seed Stratification Practices in The American Nurseryman.**

So many requests for extra copies have come that the four articles by L. C. Chadwick on

Improved Practices in Propagation by Seed

have been reprinted in booklet form, at 25 cents per copy.

Send your order now.

Valuable articles of this type constantly appear in *The American Nurseryman*. Every grower of, and dealer in, outdoor stock should read it regularly.

One prominent nurseryman said recently: "When I clip the informative items from your magazine for my files, there isn't much left."

Another writes, from California: "I thought it contained little information of value on the Pacific coast, but recent issues have been so very good I feel I really need the publication."

Published twice a month

Subscription, \$1.00 per year

AMERICAN NURSERYMAN

508 S. Dearborn St. Chicago, Ill.

SALESMAN WANTED

Experienced man to call on wholesale nursery trade.

Lake's Shenandoah Nurseries
Shenandoah, Ia.

HELP WANTED

A good nurseryman, one who is sober, honest, courteous, reliable and knows his stock. Write, giving full particulars, salary wanted, when available. 18501 Grand River, Detroit, Mich.

SITUATION WANTED

A permanent connection by retail agency man with 20 years' experience; now in business for self, but forced to liquidate because of lack of working capital. State proposition in detail. Address No. 54 e/o American Nurseryman, 508 S. Dearborn St., Chicago, Ill.

OBITUARY.

Frank M. Schmidt.

Frank M. Schmidt, president of J. H. Schmidt & Son, Inc., Millburn, N. J., died Thursday, April 15, at the age of 53. He had been ill for six weeks.

During his twenty-odd years in the landscape and nursery business, Mr. Schmidt was active in encouraging the observance of better business ethics in the trade. He was a member of the American Association of Nurserymen and of the Eastern Nurserymen's Association and had served as president of the New Jersey Association of Nurserymen. Mr. Schmidt was a member of the shade tree commission of Millburn for about fifteen years. He was chief of the fire department for seven years.

His widow, Clara M. Schmidt; his daughter, Martha M. Schmidt, who was associated with him in business; his mother, Ada L. Schmidt, and his brother, Nicholas C. Schmidt, survive him.

William H. Hartman.

The death of William H. Hartman, of William H. Hartman & Son, Dansville, N. Y., occurred March 27. Mr. Hartman, who was 85 years old, had been confined to his home since last September with illness. He was born near his late residence. After leaving school, he turned his attention to the pursuit of agriculture and continued the successful farming and growing of nursery products on his extensive farm until his death. He represented one of the oldest families of Livingston county and lived in a home first erected in 1827 and rebuilt by him in 1893. He was a director of the Citizens Bank & Trust Co. of Dansville and a long-time member of Phoenix lodge, F. A. M. An only son, Herbert, died in 1928, and his wife, in 1929. Mr. Hartman was buried March 30 in Greenmount cemetery, with Masonic services at the grave.

LANDSCAPE LIGHTING.

Illumination of gardens in home grounds as well as public places is coming so steadily to the fore that nurserymen not only include it in some of their landscape plans, but offer equipment to their patrons. Those who need sales literature on the subject to pass on to customers will find extremely useful a circular prepared by the Garden Lighting Equipment Co., Cleveland, O., for distribution by nurserymen and dealers. This makes a handsome stuffer for the customary size of commercial envelope, carrying a dozen illustrations and information on garden lighting and equipment for that purpose. The name and address of the nurserymen can be imprinted or stamped on these circulars before mailing to their customers.

INSECTICIDE BULLETIN.

Recently published by the Tobacco By-Products & Chemical Corp., Louisville, Ky., is a pamphlet called the Black Leaf 40 Bulletin. This is a special 4-page bulletin covering the use of Black Leaf 40 for the control of insect pests on plants and animals. Some of the uses listed for this insecticide are for early spraying, for protecting shade trees, for controlling insects injurious to leaves and for such insects as aphids and bud moth.

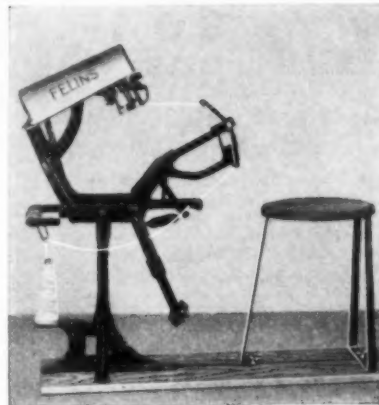
FELINS
BUNCH TYER

TIE cut flowers—rosebushes—shrubs—perennials, for store and individual trade or retail mail orders—small fruits—counted seedlings—young plants.

Save Time - Labor - Money

GET this sturdy foot-operated or electric tying machine. Both hands free to form and handle bunches. Operate standing or seated, in field or shed.

Use 6 to 16-ply cotton twine or tape ¼ inch wide, without change of knotter.



Dual Ball and Roller Bearing

FELINS
2950 N. 14th St.
Milwaukee, Wis.

HORMODIN-A

The new root-forming chemical which speeds plant propagation. Developed by Boyce Thompson Institute. Quicker and better rooting of evergreens, fruit trees, ornamentals, dahlias, shrubs, perennials, etc. Full directions with each bottle.

20 BTI units (sufficient for 300 to 1000 cuttings)	\$1.00, postpaid
60 BTI units (sufficient for 450 to 1800 cuttings)	2.00, postpaid
240 BTI units (sufficient for 1800 to 7200 cuttings)	7.00, postpaid
480 BTI units (sufficient for 3600 to 14,400 cuttings)	13.00, postpaid
960 BTI units (sufficient for 7200 to 28,800 cuttings)	24.00, postpaid

New Catalogue of NURSERY TOOLS and SUPPLIES.

Write for your copy.

AMERICAN FLORIST CO.
1335 W. Randolph St. CHICAGO

CLARENCE D. VAUGHN, owner of Vaunlanda Gardens & Nursery, Woodland, Cal., was married recently to Mrs. Minna B. Owen, Sacramento.

HEADQUARTERS at Los Angeles, Cal., have been established by Elmer E. Carr, of the Pine Hurst Nurseries, Santa Cruz, Cal., with Carl Hyler, landscaper, as his chief agent.

L. N. BRYAN, of the Hill Side Garden, Luray, Va., landscape gardener and dealer in nursery stock, died April 10 at his home at the age of 54. He was well known for having landscaped the Green Spring valley in Maryland years ago.

L. F. ELLERS, San Diego, Cal., has purchased two and one-half acres on West Ramsey street, Banning, for a nursery.

S. MENDELSON MEEHAN, Philadelphia, is still in the hospital recovering from critical injuries received in an automobile accident April 7, although Mrs. Meehan, injured at the same time, left April 18.

AS THE first step in a major plan of beautification for Menlo Park, Cal., the city council recently approved the purchase of 200 trees from Thomas Stentford, of the Menlo Park Nurseries, who has agreed to furnish, plant and maintain the trees for three years at a cost of \$2.50 each.

ATTENTION NURSERYMEN!

*Spray with, and
recommend*



IMP. SOAP SPRAY

**Use 1 part with 25 to 40
parts of water**

*Ask your nearest seedsman, or
write for literature.*

**THE AMERICAN COLOR
AND CHEMICAL CO.**

176 Purchase St. Boston, Mass.

Now Is the Time

to get ready for next year's drought. Install your own system and get the best, and at the same time save from $\frac{1}{4}$ to $\frac{1}{2}$ the usual price. Any ordinary workman can drill the holes for the nozzles with our Niagara drilling machine rapidly and accurately. Our Niagara oscillators are low in price and dependable.

Write for free literature

C. W. SKINNER & CO.

Newfield - New Jersey

Automatic Irrigation and Supplies

We can supply you anything you need.

Complete Irrigation Lines
Superior Outdoor Nozzles
Roller-bearing Hangers
Quick-change Unions
Hand-turning Unions
Kalamazoo Oscillators
Drilling and Tapping Machines
Etc.

Write today for literature and prices

John Rust Mfg. Co.

628 W. Patterson St. Kalamazoo, Mich.

Overhead Irrigation

It gives you year-round protection against drought and frost. Costs little. Easy to install. Send today for FREE BOOK.



WHITE SHOWERS, Inc.
6457 Dabois St., Detroit, Mich.



MORE PROSPECTS

mean better prices and larger sales.

You can get them by
advertising stock in

THE AMERICAN NURSERYMAN

508 S. Dearborn St., Chicago, Ill.

INDEX TO ADVERTISERS

Aeroil Burner Co.....	22	Jewell Nursery Co.....	17
American Color & Chemical Co.....	26	Kallay Bros. Co.....	15
American Florist Supply Co.....	25	Leonard & Son, A. M.....	28
Andrews Nursery.....	21	Lissadell.....	24
Artman, C. E., Native Gardens.....	19	Lovett, Lester C.....	17
Bartlett Mfg. Co.....	28	Maloney Bros. Nursery Co.....	15
Bobbink & Atkins.....	21	Mathews Eggert Nursery.....	15
Burr & Co., C. R.....	17	McGill & Son, A.....	19
Campbell-Hausfeld Co.....	27	Milton Nursery Co.....	19
Canterbury.....	15	Mount Arbor Nurseries.....	15
Chase Bag Co.....	27	Pacific Coast Nursery.....	19
Chase Co., Benjamin.....	27	Peterson & Dering, Inc.....	17
Clarke & Co., W. B.....	19	Pfund Bell Nursery Co.....	19
Cole Nursery Co.....	14	Pitzonka's Pansy Farm.....	21
Cottage Gardens.....	21	Prairie States Seed Co.....	15
Cottage Herb Garden.....	12	Princeton Nurseries.....	17
Dixie Rose Nursery.....	17	Process Color Printing Co.....	28
Doe Valley Farms, Inc.....	21	Rexford Paper Co.....	27
Eden Nurseries.....	19	Robbins, E. C.....	21
Elmgrove Nursery.....	24	Robinson, E. D.....	28
Eschrich's Nursery.....	19	Rust Mfg. Co., John.....	26
Evergreen Nursery Co.....	15	Scarff's Nurseries.....	21
Fairview Evergreen Nursery.....	15	Shenandoah Nurseries.....	15
Felins.....	25	Sherman Nursery Co.....	19
Foster Nursery Co.....	21	Sherwood Nursery Co.....	19
Garden Lighting Equipment Co.....	28	Skinner & Co., C. W.....	26
Goldsboro Nursery.....	24	Stokes & Son, Sam.....	24
Goodrich Co., B. F.....	28	Storrs & Harrison Co.....	13
Hansen Nursery, Carl A.....	19	S-W Supply Co.....	22
Harmon Nursery.....	21	Tabor, Rollin H.....	27
Hauck Mfg. Co.....	22	Verhalen Nursery Co.....	17
Herbst Bros.....	15	Vestal & Son, Jos. W.....	24
Highland Nurseries.....	15	Waynesboro Nurseries, Inc.....	16
Hill Nursery Co., D.....	15-27	Weathered Oak Herb Farm, Inc.....	12
Hill's Plant Farms.....	21	Westminster Nursery Co.....	21
Hilltop Orchards & Nurseries.....	21	White Showers, Inc.....	26
Hobbs & Sons, C. M.....	17	Wilson & Co., Inc., C. E.....	17
Hogansville Nurseries.....	21	Wisconsin Moss Co.....	27
Jackson & Perkins Co.....	17	Wonderland Nurseries.....	24

AMERICAN NURSERYMAN

The Magazine That Will Make Your Advertising Pay
AND WHY

Circulation is gaining month by month. Over 80 per cent of the producing acreage and buying power of the industry is covered. New subscribers add to the buyers you reach—at no extra cost. Rates are low for this select group of buyers—not to be reached completely otherwise. This is the recognized paper of and for nurserymen nationally.

Carries the Largest Volume of Nursery Advertising

— Showing a Gain of 25% Over a Year Ago —

WATERPROOF PAPER

RED-CORE Water-Tite papers are made from paper and other materials that are produced in accordance with our definite specifications. For that reason, paper far superior in formation and strength to ordinary kraft wrapping is used.

Different grades and combinations are manufactured for all purposes. In our sample book you will find duplex, reinforced, jute-inserted, burlap-backed, burlap-inserted and creped waterproof papers.

This sample book and our latest price list upon request.

REXFORD PAPER COMPANY
Milwaukee, Wisconsin

HILL'S BOOK OF EVERGREENS



New!

See this beautifully-illustrated new book, answering every question about Evergreens. Produced by America's leading Evergreen Nursery with a background of 80 years' experience with Evergreens. A cloth bound book, 7x9 1/4", containing 320 pages. There are 50 chapters, including complete information on uses, descriptions, propagation, historical and cultural information pertaining to Evergreens. 360 illustrations, 45 in full color. Price \$3.50, postpaid, anywhere in the United States. Sent with full privilege of approval.

D. HILL NURSERY COMPANY
Box 305 DUNDEE, ILLINOIS
Evergreen Specialists America's Largest Growers

LABELS FOR NURSERYMEN

THE BENJAMIN CHASE COMPANY
DERRY, N. H.

TREE SUPPLIES

Tabor's Tree-wound Dressings
for Treatment of Tree Injuries.

Tree bracing rod, nuts and washers. Cabling and guying materials.

For listings, write
ROLLIN H. TABOR Mt. Vernon, Ohio

SPHAGNUM MOSS

Carlots or less, write
WISCONSIN MOSS CO.
Wisconsin Rapids, Wis.



CHASE SAXOLIN DUPLIX CRINKLED

WATERPROOF KRAFT
Spiral Wrap

For newly planted trees, Spiral Wrap in narrow width rolls helps your stock get off to a healthy growth.

Serves as a protection against sun scald and insect attack.

Provides security against the elements, severe frost and cold and the ravages of rabbits and other rodents.

Adjusts itself automatically to the contour of the tree with velvety wrapping smoothness. Prevents loss of moisture. Surface sealed with sufficient porosity to admit air.

Spiral Wrap gives complete coverage, perfect balance and flexibility . . . exerts an even pressure and permits expansion with the growth.

For general nursery use, CD-375 Saxolin Duplex Crinkled Waterproof Kraft is supplied in convenient size rolls of 200 yards, all standard widths . . . 36", 40", 48", 54" and 60" or cut into sheets of desired size, which saves time and eliminates waste.

Write for Samples and Prices

CHASE BAG CO.

Department of Specialties

Cleveland, Ohio

WRITE FOR 10-DAY TRIAL OFFER on this High Pressure PARAGON SPRAYER



TEST it for yourself. Compare results with what you have been getting from your present sprayer. Use any spray solution or cold water paint. Spray your nursery stock, whitewash your greenhouses, barns and tool sheds, **inside and out**. Note how easily this **Paragon** delivers powerful uniform pressure at the nozzle with little effort at the pump handle. Passes through narrowest aisles without jamming at corners. Automatic agitator prevents solution from settling. We guarantee it never to clog while in use. Ten days trial costs you nothing if not satisfied. If your dealer does not sell the Paragon, mail the coupon today.



Paragon No. 3
7 1/2-ft. pipe
10-ft. hose
3 nozzles

1 or 2 wheel truck

The Campbell-Hausfeld Company
503 State Ave.
Harrison, Ohio

Send prices and details as per advertisement in American Nurseryman for May 1.

Name.....Post Office.....
Street.....State.....

TRY GOODRICH RUBBER Budding Strips



Nurserymen everywhere are praising the Goodrich Rubber Budding Strip, for this modern aid to growers speeds tying operations, provides maximum protection, hastens knitting, and permits formation of a better stand. This strip is scientifically designed for:

- 1 **FASTER APPLICATION**—No preparation required. Put in position easily and quickly.
- 2 **EVEN PRESSURE**—Uniform over the entire bound area, with sufficient flexibility to expand with growth of bud.
- 3 **GREATER PROTECTION**—Eliminates danger of cutting, permits bud to knit faster, assures better stand.
- 4 **SELF-RELEASING**—Made purposely to deteriorate in from two to three weeks, automatically loosening on the stand.

If you have not become acquainted with this efficient, up-to-date method, ask for **FREE SAMPLES** and prices. Try Goodrich Rubber Budding Strips at our expense. Once you try them, you will become a regular user! Write today to

THE B. F. GOODRICH CO.
AKRON, OHIO



This advertisement appears in COUNTRY LIFE—May. Others appear in AMERICAN HOME, HOUSE AND GARDEN, etc.

New profits . . . from LIGHTED GARDENS

Garden owners are showing keener interest in garden lighting than ever before. The evidence is the volume of orders we are receiving for Garden Lighting Equipment—ILLUMINATED LILY PADS, LUMINOUS BIRD BATHS, SHIELDS, BORDER SETS, TUFA ROCK SETS—and other novel equipment for lighting gardens, pools and rockeries.

An aggressive national advertising campaign is whipping up demand for our complete line of Garden Lighting Equipment. We supply selling literature and selling ideas to help you build sales.

FOR EXTRA SALES AFTER DARK

Use garden lighting to sell your own business. Illuminate pools, borders, beds and rock gardens with our garden lighting equipment to attract more customers . . . at night.

WRITE FOR CATALOGUE

Our new catalogue with prices shows our complete line of garden lighting equipment and plenty of practical ideas for its use.

THE GARDEN LIGHTING EQUIPMENT CO., 1210 E. 113th St., Cleveland, Ohio

PRUNE and TREAT with Bartlett Equipment



Compound Lever Tree Pruners, Pole Saws, Cross Cut Saws and Tree Surgeons' Supplies. Bark Scrapers, Wound Dressing, Grafting Wax and Tools, Tree Bracing Supplies, Tree Paint.

Write for free illustrated catalogue showing complete line.

Bartlett Manufacturing Co.
3056 E. Grand Blvd. Detroit, Michigan

NURSERY TOOLS

Nursery Spades, Kunde Knives and Pruning Shears, Budding and Grafting Supplies. Free 88-page Catalogue.

A. M. LEONARD & SON
Piqua - Ohio

"A friendly, efficient sales service"

E. D. ROBINSON Sales Agent

38 So. Elm St., Wallingford, Conn.
P. O. Box 285

Representing

Adams Nursery, Inc.
Bristol Nurseries, Inc.
Barnes Brothers Nursery Co., Inc.
North-Eastern Forestry Co., Inc.
A. N. Pierson, Inc.

A complete line of well grown, hardy plant material

PRINTS, MAPS and FOLIOS

PLATE BOOKS

Process Color Printing Co.
701 Searle Bldg., Rochester, N. Y.